Chapter V: Environmental Consequences

Introduction

The National Environmental Policy Act (NEPA) requires that environmental documents disclose the environmental impacts of a proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This chapter analyzes the environmental impacts of the four *Merced Wild and Scenic River Revised Comprehensive Management Plan and Supplemental Environmental Impact Statement* (Revised Merced River Plan/SEIS) alternatives on natural resources, cultural resources, the visitor experience, and social resources. This analysis provides the basis for comparing the beneficial and adverse effects of the alternatives.

In compliance with NEPA, the environmental analysis evaluates the potential effects of the alternatives on all of the park's natural, cultural, visitor experience, and social resources, including those not encompassed within the Outstandingly Remarkable Values (ORVs). However, since this document must comply with the requirements of the Wild and Scenic Rivers Act, the potential effects of the alternatives on the ORVs for each segment are addressed in the resource analysis. In addition, how each alternative protects and enhances the ORVs under the Wild and Scenic Rivers Act is summarized in the tables at the end of the analysis section for each alternative.

This analysis only addresses environmental consequences associated with the development and implementation of a user capacity program for the Merced River corridor and the reassessment of the river corridor boundary based on the location of ORVs and related management zoning prescriptions in the El Portal segment. The remaining management elements as previously described and analyzed in the Merced River Plan/FEIS are not being revisited or reanalyzed in this Plan.

Due to the conceptual nature of the alternatives, their potential consequences can be addressed only in qualitative terms. The conclusions presented herein are based on review of existing information provided by the National Park Service. If and when specific National Park Service management actions are proposed as a result of this plan, National Park Service staff will determine whether more detailed environmental documentation is required, consistent with the provisions of NEPA.

Following this introduction, Chapter V presents the methodologies used in the environmental impact analysis. The impact analyses sections are organized by alternative. The first section analyzes Alternative 1 (the No Action Alternative), including impacts on natural resources, cultural resources, the visitor experience, and social resources and presents mitigation measures, cumulative impacts, and impact conclusions. The same framework of analyses is applied to Alternatives 2, 3, and 4 in subsequent sections. Environmental impacts are summarized in table III-12 at the end of Chapter III.

Cumulative Impacts

A cumulative impact is described in regulations developed by the Council on Environmental Quality (CEQ), regulation 1508.7, as follows:

> *". . . 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 non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."*

Appendix E contains the list of past, present, and reasonably foreseeable actions included in the cumulative impacts analysis. These cumulative actions are evaluated in the impact analysis in conjunction with the impacts of an alternative to determine whether they would have any additive effects on a particular natural, cultural, or social resource. Because many of these cumulative actions are in the early planning stages, the evaluation of cumulative impacts was based on a general description of each project.

The Revised Merced River Plan/SEIS is a programmatic document and does not recommend implementation of specific large-scale construction or development related actions. As a result, the cumulative impacts analysis is presented in qualitative terms, rather than in specific measured or quantitative terms. General guidance and methodologies for the cumulative impacts analysis in this document follow those published by the CEQ (CEQ 1997). Cumulative impacts have been analyzed for each alternative, and can be found following the environmental consequences analysis for each resource topic. The methodology for defining the context, intensity, duration and type of cumulative impact for a specific resource topic is the same as that described for the environmental consequences analysis of each resource topic.

Impairment

Impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. The need to analyze and disclose impairment impacts originates from the 1916 Organic Act, which mandated the National Park Service "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."

An impact would be less likely to constitute impairment if it is an unavoidable result (which cannot reasonably be further mitigated) of an action necessary to preserve or restore the integrity of park resources or values (NPS 2000c). 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
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park
- Identified as a goal in the park's *General Management Plan* (NPS 1980a) or other relevant National Park Service planning documents

Impairment of park resources was evaluated on the basis of the type and intensity of impacts, and in terms of the types of resources affected. Impairment is generally considered for natural, cultural, and scenic resources. Overall, beneficial impacts would not constitute impairment. With respect to the intensity of impacts, negligible and minor adverse impacts are not of sufficient magnitude to constitute impairment. Moderate and major adverse impacts may constitute impairment, but not automatically. Rather, these impacts must be analyzed with respect to the three criteria presented above. Impairment is generally considered for geological, hydrological, biological, cultural, and scenic resources. Impairment determinations are not required for resource topics that are not considered to be park resources or values. Thus, impairment is addressed in the conclusion section of the appropriate resource topics under each alternative.

Methodologies

This section presents the methodologies used to conduct the environmental impact analyses. The section begins by describing methodologies and assumptions common to all resource topic areas, and then presents methodologies specific to individual resource topic areas in the following order:

Natural Resources: Geology, Geohazards, and Soils; Hydrology, Water Quality, and Floodplains; Wetlands; Vegetation; Wildlife; Rare, Threatened, and Endangered Species; Air Quality; and Noise

Cultural Resources: Archeological Resources; Traditional Cultural Resources; and Historic Sites, Structures, and Landscapes

Visitor Experience: Recreation; Interpretation and Orientation; Visitor Services; and Wilderness Experience

Social Resources: Land Use; Transportation; Scenic Resources; Socioeconomics; and Park Operations and Facilities

Each resource topic area includes a discussion of the impacts of each alternative, including the identification of the impacts or affects of the actions comprising the alternative, and a characterization of the impacts in terms of context, intensity, duration, and type of impact. The context of the impact considers whether the impact would be local or regional. The intensity of the impact refers to the severity or magnitude of the impact, and considers whether the impact would be negligible, minor, moderate, or major. The duration of the impact considers whether the impact would occur in the short term (temporary) or the long term (permanent). The type of impact considers whether the impact would be beneficial or adverse to the natural, cultural, or social environment.

Annual park visitation peaked at just over 4.19 million visitors in 1996. Park visitation decreased from 1996 through 2004 to approximately 3.39 million visitors annually. However, for the purposes of this analysis, it is expected that overall park visitation will increase slowly over the next 15 years under existing park management policies (the No Action Alternative). Although it is not known how much annual visitation would increase by 2020, it is expected that increased visitation during peak periods would require implementation of restricted access to Yosemite Valley during some peak visitation periods. Increased visitation demand by 2020 would be

expected to trigger the need to implement restricted access on an increasing number of days during the peak season, and it is expected that there would be more restricted access days in 2020 than is currently experienced. Increases in 2020 visitation levels would be expected to occur primarily during the current non-peak periods (e.g., before and after peak summer months, and on weekdays during peak summer months).

With the implementation of a VERP program and possibly limits, some of the alternatives could result in decreased visitation to segments of the Merced River corridor. As a result, it is assumed that by 2020 some visitors could be displaced to other areas of the park or displaced from the park itself.

This document is a programmatic plan that looks at broad user capacity program frameworks. The plan does not recommend implementation of specific developments or actions. To provide decision makers and the public with an accurate idea of the environmental consequences of the Revised Merced River Plan/SEIS alternatives, the analysis team identified potential actions that management could implement under the frameworks provided under each of the action alternatives and analyzed their effects as compared to conditions under the No Action Alternative. The environmental consequences analyses are qualitative rather than quantitative, because the action alternatives are conceptual and specific actions are not prescribed under this plan.

The environmental consequences analysis in this chapter evaluates the potential effects of implementation of various types of management actions. Because implementation of VERP would allow for park management to use a variety of management tools to address user-related impacts, the analysis evaluates the potential effects of a broad range of actions – from public education to construction of improvements to visitor access restrictions. In reality, implementation of the VERP program would likely result in the implementation of a number of these measures, as determined to be appropriate based on site-specific circumstances. VERP is an adaptive management process, and management actions would change and evolve based on the continued monitoring of actual conditions versus desired conditions. Thus, if VERP monitoring indicated there was a yellow light condition (see table II-6 in Chapter II), park management could begin implementing measures such as public education, installation of temporary barriers, or other easily management actions to bring conditions back within standards. If conditions were to continue to decline, park management would most likely implement additional, more restrictive or intensive measures to address the impacts. Because the VERP program requires park management to take actions to keep conditions within adopted standards, or to improve conditions that do not meet the standards, park management would continue to implement a variety of measures as needed to meet the adopted standard. Therefore, although the effects of individual management actions taken in the short term are identified in each section, the overall effect of the VERP component of the action alternatives would be to protect and enhance the condition of park resources and ORVs in the long term.

Finally, the No Action Alternative for the Revised Merced River Plan/SEIS includes the implementation of all of the elements of the Merced River Plan (with the exception of VERP), as well as implementation of other existing user capacity measures described in Chapter II, such as the trailhead quota system and facility limits. Although each of the action alternatives also includes implementation of the Merced River Plan elements and the user capacity program as described under the No Action Alternative, the analysis in this chapter focuses on the effects of

implementing the additional user capacity elements of each action alternative (VERP, limits) compared to the No Action Alternative.

Natural Resources

Geology, Geohazards, and Soils

This impact assessment focused on effects that geologic processes in the Yosemite National Park would have on visitors, employees, and facilities under each alternative of the Revised Merced River Plan/SEIS. Geologic processes can negatively affect visitors, employees, and facilities when events such as rockfalls, earthquakes, and severe soil instability result in injury, death, or damage to facilities.[1] The assessment also focused on the effect the Revised Merced River Plan/SEIS alternatives would have on the geologic processes, namely, the formation and conservation of soil resources. Impacts associated with management actions discussed in this Revised Merced River Plan/SEIS could affect current soil resources through accelerated erosion, soil loss, or soil removal.

Several assumptions regarding facility placement, geologic design parameters, and public safety were integrated into this assessment, as summarized below.

- It is not possible to avoid risks due to geologic processes such as earthquakes and rockfalls. Considering this, some facilities located within the park, especially in Yosemite Valley, the Merced River gorge, and El Portal would be exposed to risks of damage from rockfalls.
- Geotechnical studies to determine soil stability conditions would be performed prior to placing, designing, or relocating a facility within the park, and facility design within Yosemite National Park would conform to accepted building codes regarding seismic design parameters.
- In emergency situations, the National Park Service may mechanically trigger a rockfall, but in most cases the National Park Service allows natural processes to occur unimpeded.
- The National Park Service has developed geologic hazard guidelines for development within Yosemite Valley (Appendix C in NPS 2000e). The focus of these guidelines is to protect visitors, employees, and infrastructure from geologic hazards and to locate facilities out of geologically hazardous areas.
- In the event of a rockfall, the National Park Service would close the affected area to protect visitor and employee safety. Rocks on roads would be removed, but rockfall talus in rivers would not be removed, unless the river is dammed and flooding threatens utilities or facilities.

Geologic risks that affect public safety are rarely predictable, and the extent to which they can affect people and property cannot be quantified. Quantitative analysis of other potential effects, such as soil erosion, removal, and loss was not feasible for this impact assessment due to the programmatic nature of the plan. Rather, analysis of effects was qualitative, and professional judgment has been applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. When possible, mitigation measure(s) were incorporated into this Revised Merced River Plan/SEIS to reduce the intensity of adverse effects.

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[1] Throughout Chapter V, unless otherwise noted, "rockfalls" is used as a generic term to refer to rockfalls in a strict sense but also to rockslides, debris avalanches, debris flow, and rock avalanches.

Impact Assessment

The impact assessment addressed geologic hazards (earthquakes and rockfalls) and impacts to soil resources. Geologic hazards that would expose people to injury and infrastructure to damage were considered in terms of impacts to public safety. Geologic impacts related to facility development or natural resource protection were considered in terms of depletion of or adverse effects on soil resources. Potential management actions under each alternative were evaluated in terms of the context, intensity, and duration of the geologic impacts, and whether the impacts were considered to be beneficial or adverse to visitors, infrastructure, or soil resources.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or impacts specific to the river corridor, including the El Portal Administrative Site. In considering geologic hazards, it was assumed that the impacts would be consistently local.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on public safety or soil resources. Minor impacts were those that would be present but would not be expected to have an overall effect on those conditions. Moderate impacts would be clearly detectable, and could have an appreciable effect on public safety and soil resources. Major impacts would have a substantial, highly noticeable influence on public safety and soil resources.

There will always be a potential for adverse impacts to life and property due to geologic hazards in Yosemite National Park. Therefore, management actions to avoid placement of facilities (or reduce numbers of people) in areas susceptible to geologic hazards may decrease the risks but would not necessarily reduce the intensity of the impact.

Duration. The duration of an impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of impacts. A long-term impact would have a permanent effect on public safety and geologic conditions.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to public safety and soil resources. Beneficial impacts would improve soil resources by restoring areas and limiting development. Adverse impacts would expose people and property to effects of earthquakes and rockfall events. Adverse impacts also would deplete or negatively alter soil resources.

Hydrology, Floodplains, and Water Quality

This section analyzed potential changes to hydrologic processes of the Merced River, including the river's interaction with its floodplain as well as water quality. This qualitative assessment focused on the physical and chemical processes of the Merced River that might be altered under the management practices called for as part of the proposed alternatives. Quantitative analyses of any potential changes to the Merced River were not feasible due to the programmatic nature of the plan. Analysis of the alternatives was qualitative and based on identified hydrologic processes, as described in the Hydrology, Floodplains, and Water Quality section in Chapter IV, Affected Environment.

Streamflow

The analysis examined potential changes to the free-flowing nature of the river as a result of the potential management actions listed under each of the action alternatives. This section addressed existing and potential future restrictions on streamflow and the possibility of removing current streamflow restrictions, such as dams or levees.

Floodplain

This section qualitatively analyzed the impacts or benefits to the river's floodplain due to potential changes in intensity and location of visitor use along the river. Due to the qualitative nature of this assessment, a reduction or modification of visitor use and facility development in the floodplain was perceived to be beneficial to the floodplain and protection of the river channel.

Water Quality

The analysis identified potential effects on water quality associated with visitor use and the generation of nonpoint-source pollution, such as refuse and automobile-related pollutants. Additionally, the analysis examined potential impacts on water quality from construction or removal of facilities within the river's floodplain.

Impact Assessment

Proposed management actions for each alternative were evaluated in terms of the context, intensity, and duration of the hydrologic impacts, and whether the impacts were considered to be beneficial or adverse to the hydrologic environment.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur at localized areas due potential management actions within the corridor. Regional impacts would be impacts on the entire river corridor within Yosemite National Park.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on the hydrology or quality of the river. Minor impacts were effects on hydrologic processes that were slightly detectable but not expected to have an overall effect on the character of the river or its floodplain. Moderate impacts would be clearly detectable and could have an appreciable effect on hydrologic processes, the adjacent floodplain, or water quality. Major impacts would have a substantial, highly noticeable influence on the hydrologic environment and could permanently alter river processes, floodplain formation and evolution, and water quality.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional activities, such as facility construction or road removal. A long-term impact would have a permanent effect on the hydrologic environment, such as altering the dynamic processes that govern the free-flowing nature of the river, floodplain formation and evolution, or the condition of water quality.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to the hydrologic environment. Beneficial impacts would sustain streamflow dynamics, allow natural processes to prevail, and protect or improve water quality. Adverse impacts would negatively alter

hydrologic processes, thereby hindering natural processes and reducing protection of the river, its floodplain, and water quality.

Wetlands; Vegetation; Wildlife; and Rare, Threatened, and Endangered Species

National Park Service policy is to protect the natural abundance and diversity of all of the park's naturally occurring communities. To provide a consistent basis for analyzing impacts, and to ensure that alternatives are compared using the same frame of reference, the methodology described below was developed.

Some aspects of impact assessment methodology relate simply to whether an action breaches federal laws, regulations, and executive orders; similar state laws (for example, the California Endangered Species Act); or National Park Service *Management Policies 2001* (NPS 2000f). A second level of impact assessment must address issues and concerns expressed during public scoping. The third, and probably the most important, level compares a projected impact with the natural history of a species or the known sensitivities of a habitat.

This assessment was based on the assumptions listed below.

- The greater the size of a biotic community and the stronger its links to neighboring communities, the more valuable it is to the integrity and maintenance of biotic processes. Development limits the size of a community and fragments and disassociates communities from each other.
- The more developed areas become, the less valuable they are as wildlife habitat. New development would increase human presence and increase the potential for soil, wildlife, and vegetation disturbance. The potential for negative wildlife interactions (such as human injury from wildlife and the introduction of unnatural food sources) also would increase. The removal of development from an area would increase the value of the habitat. However, in some cases, dispersal of the same number of visitors may well have a greater impact than an existing "containment" of disturbance within a designated area.
- The effects of human food on the behavior, distribution, and abundance of wildlife species would continue in existing developments and would begin in new developments unless adequate facilities, education, and enforcement were provided.
- The juxtaposition of natural communities to roads and other developments hinders the use of prescribed fire for restoring historic fire intensity, frequency, and severity.
- Development and activities near sensitive habitats may adversely affect adjacent natural communities. Modifications of a river channel may cause channel instability and shifting, increased bank erosion, and changes in flood-flow elevations. The presence of well-vegetated banks and a sufficient width of riverbank protects the integrity of the river channel and shore.
- Disturbance in or near a river and its tributaries may reduce the productive capabilities of associated natural communities. Modifications to river form, soil compaction, loss of riparian vegetation, removal of woody debris, and accelerated erosion and sediment transport influence important habitat characteristics such as riffle/pool complexes, substrate type, location, and cover. These physical aspects often determine the composition of vegetative and aquatic communities.
- Roads change water inflow and outflow patterns and may dewater sections of meadow. The lack of a sufficiently high water table in meadows allows invasive plants to outcompete native vegetation and encourages conifer establishment, which threatens meadow communities.

- Roads generally form barriers for wildlife and fragment habitat.
- Development and impacts in riparian zones may influence critical water quality elements such as water temperature, suspended sediments, and nutrients. These elements interact in complex ways in aquatic systems and directly and indirectly influence patterns of growth, reproduction, and migration of aquatic organisms.
- Ecological restoration of native communities would involve some short-term adverse impacts (e.g., smoke from prescribed burning) but over time can successfully replicate natural processes.

Quantitative analysis—that is, determining a measure of impact such as decibels of sound reaching the nest of a spotted owl—was not feasible for this methodology because this plan is programmatic and does not look at the implementation of specific actions. Qualitative analysis relies substantially on professional judgment, supported by extrapolation of relevant research, where appropriate, to reach reasonable conclusions as to the context, intensity, duration, and type of potential effect. When possible, mitigation measure(s) were incorporated into the document to reduce the adverse effects of impacts to natural resources.

Impact Assessment

The starting point for impact assessment is the natural processes of the Merced River corridor, including size, physical foundation, and components of the natural communities and ecosystems.

Proposed management actions under each alternative were evaluated in terms of the context, intensity, and duration of the impacts, as defined below, and whether the impacts were considered to be beneficial or adverse to the natural environment. Generally, the methodology for natural resource impact assessment follows direction provided in the *Council of Environmental Quality Regulations for Implementing the National Environmental Policy Act*, section 1508.27.

Context. Context suggests that certain impacts depend upon the setting of the proposed action. For instance, impacts that reduce the value of the Merced River in providing connectivity between habitat types could be minor if such connections are abundant in a given region, moderate or major if they are not. The context of the impact considers whether the impact would be local or regional.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. These designations are used to describe both beneficial and adverse impacts. Negligible impacts were effects considered detectable but having no principal effect on biological resources. Minor impacts were effects that were detectable but not expected to have an overall effect on natural community structure. Moderate impacts would be clearly detectable and could have an appreciable effect on individual species, community ecology (e.g., the numbers of different kinds of amphibians present), or natural processes (e.g., fire). Major impacts would have a substantial, highly noticeable influence on natural resources. This would include impacts that have a substantial effect on individual species, community ecology, or natural processes.

Duration. Under this heading, both short- and long-term effects are relevant. A short-term impact would be temporary in duration and associated with transitional types of impacts, such as facility construction or bridge removal. Long-term impacts are somewhat more conjectural. For example, long-term declines in bird species diversity at heavily used sites may take decades to become evident.

Type of Impact. The type of impact considers whether the impact would be beneficial or adverse to biological resources. Effects to biological resources are considered beneficial if an action causes no detrimental effect and results in an increase in rare species or habitat components, native ecosystem processes, native species richness/diversity, or native habitat quantity and quality.

Air Quality

The air quality impact assessment involved the identification and qualitative description of the types of actions under the various alternatives that could affect air quality, corresponding emissions sources and pollutants, and relative source strengths. Based on the relative source strengths, a qualitative assessment was performed to determine the potential for higher pollutant emissions or concentrations, taking into account the frequency, magnitude, duration, location, and reversibility of the potential impact. In addition, regional pollutant transport issues were evaluated in the context of regional cumulative impacts.

Several assumptions were integrated into this assessment:

- This plan would not affect the smoke management policies in the *Fire Management Plan* (NPS 2004b).
- This plan would not affect the campfire regulations in the Valley.
- The National Park Service would continue to ensure that all stationary emissions sources under its control or under the control of its concessioners comply with applicable air district rules and regulations.
- The National Park Service would continue to participate in the regional air quality planning processes for ozone, PM-10/PM-2.5, and visibility impairment and would continue to review applications for new or modified major stationary sources upwind of the park, pursuant to Prevention of Significant Deterioration regulations.
- The National Park Service would comply with U.S. Environmental Protection Agency's (U.S. EPA's) general conformity rule for any future actions that would occur within Madera County, which is part of San Joaquin Valley Air Basin, a nonattainment area for the national 1-hour ozone, 8-hour ozone, and PM-10 standards, and within Mariposa County, which is a nonattainment area for the national 8-hour ozone standard.

Quantitative analysis of potential air quality impacts was not feasible due to the programmatic nature of this plan. Rather, analysis of effects was qualitative, and professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. When possible, mitigation measure(s) were incorporated into the plan to reduce the intensity of adverse effects.

Impact Assessment

The air quality impact assessment of the plan evaluated how types of changes would affect air pollutant emissions and concentrations. Air quality impacts were evaluated in terms of their context, intensity, and duration, and whether the impacts were considered to be beneficial or adverse.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or impacts specific to the river corridor, including the El Portal Administrative Site. Regional impacts would be those related to the applicable air basins: Mountain Counties Air Basin and San

Joaquin Valley Air Basin. With respect to air quality issues, both local and regional perspectives were relevant.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on air quality. Minor impacts were those that would be present but not expected to have an overall effect on those conditions. Moderate impacts would be clearly detectable and could have an appreciable effect. Major impacts would have a substantial, highly noticeable influence on local or regional air quality.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of impacts. A long-term impact would have a permanent effect on air quality.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to air quality. Beneficial air quality impacts would reduce emissions or lower concentrations, and adverse impacts would have the opposite effect.

Noise

The noise impact assessment involved the identification and qualitative description of the types of actions proposed under each alternative that could affect the ambient noise environment, corresponding noise sources, relative source strengths, and other characteristics. Based on the relative source strengths, a qualitative assessment was performed to determine the potential for a substantial increase in ambient noise levels in areas where natural quiet is an important resource. Assessments were also performed where noise-sensitive uses are located or would expose persons to excessive noise levels taking into account the frequency, magnitude, duration, location, and reversibility of the potential impact. In addition, regional noise issues such as aircraft overflights were discussed in the context of long-term trends in wilderness noise exposure.

Quantitative analysis of potential noise impacts was not feasible due to the programmatic nature of this plan. Rather, analysis of effects was qualitative, with professional judgment applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. When possible, mitigation measure(s) were incorporated into the plan to reduce the intensity of adverse effects.

Impact Assessment

The noise impact assessment evaluated how these three basic types of changes of the plan would affect the ambient noise environment in the corridor. Noise impacts were evaluated in terms of their context, intensity, and duration, and whether the impacts were considered to be beneficial or adverse.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or impacts specific to the river corridor, including El Portal. In considering noise impacts, it was assumed that the impacts would be consistently local.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on the ambient noise environment. Minor impacts were those 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. Major impacts would have a substantial, highly noticeable influence on the ambient noise environment.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of impacts, such as construction noise impacts. A long-term impact would have a permanent effect on the ambient noise environment related to park operations.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to the ambient noise environment. Beneficial noise impacts would reduce associated levels and/or exposure, while adverse impacts would have the opposite effect.

Cultural Resources

Section 106 of the National Historic Preservation Act requires a federal agency to take into account the effects of its undertaking on properties included in, or eligible for inclusion in, the National Register of Historic Places (National Register) and provide the Advisory Council on Historic Preservation the reasonable opportunity to comment. This also applies to properties not formally determined eligible, but which are considered to meet eligibility requirements.

The methodology for assessing impacts to historic resources is based on the 1999 Programmatic Agreement (see Appendix H in the Merced River Plan/FEIS) (NPS 1999w). This includes: (1) identifying area of potential impact; (2) assessing the level of resource information available, and conducting appropriate research and evaluations necessary to obtain information about resources potentially eligible for listing in the National Register; (3) comparing the area of potential effect with that of resources listed, eligible, or potentially eligible for listing in the National Register; (4) identifying the extent and type of effect; (5) assessing these effects according to procedures established by the Advisory Council's regulations; and (6) considering ways to avoid, minimize, or mitigate adverse effects (36 CFR 800).

Cultural resource impact analysis in this environmental impact statement is described in terminology consistent with the regulations of the CEQ. CEQ regulations require that the impacts of alternatives and their component actions be disclosed. It is intended that the impact assessment will comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act. The determination of effect for the undertaking (implementation of the alternative) required by the 1999 Programmatic Agreement is included in the Conclusions section for each alternative. Consistent with CEQ regulations, the analysis of individual actions includes identification and characterization of potential impacts, including an evaluation of impact intensity. This is a fundamental difference between NEPA and the National Historic Preservation Act; the National Historic Preservation Act requires determinations of no effect or effect, and furthermore, where there is a determination of effect, requires a determination of whether that effect is adverse or not adverse. Effect is evaluated on the basis of whether an undertaking alters the characteristics of a property qualifying it for eligibility to the National Register. Intensity of impacts in the cultural resource analysis then, for purposes of NEPA, is defined as:

Negligible – Impact is barely perceptible and not measurable; confined to small areas or a single contributing element of a larger national register district or archeological site(s) with low data potential

Minor – Impact is perceptible and measurable; remains localized and confined to a single contributing element of a larger national register district or archeological site(s) with low to moderate data potential

Moderate – Impact is sufficient to cause a change in character-defining feature; generally involves a single or small group of contributing elements or archeological sites(s) with moderate to high data potential

Major – Impact results in substantial and highly noticeable change in character-defining features; involves a large group of contributing elements and/or individually significant property or archeological site(s) with high to exceptional data potential

Archeological resources are typically considered eligible for inclusion in the National Register because of the information they have or may be likely to yield. Intensity of impacts to archeological resources relates, additionally, to the importance of the information they contain and the extent of disturbance or degradation.

Traditional cultural resources are considered eligible for inclusion in the National Register as Traditional Cultural Properties when they are rooted in a community's history and are important in maintaining the continuing cultural identity of the community and meet National Register criteria for evaluation and integrity. Intensity of impacts to traditional cultural resources may relate to access and use of, as well as changes to, traditionally important places.

Historic sites, structures, and landscapes are considered eligible for inclusion in the National Register when they are associated with events that have made a significant contribution to the broad patterns of our history; when they are associated with the lives of persons significant in our past; or when they embody the distinctive characteristics of a type, period, or method of construction. Intensity of impacts to historic sites, structures and landscapes may relate to the extent of degradation of site and structural integrity, including the loss of landscape characteristics.

Council of Environmental Quality regulations, moreover, call for a discussion of the "appropriateness" of mitigation and NPS-12, the *National Environmental Policy Act Guideline* of the National Park Service, requires an analysis of the "effect" of mitigation. The "resultant" reduction in intensity from mitigation is an estimate of the effectiveness of mitigation under NEPA. It does not suggest that the level of effect as comprehended by Section 106 is similarly reduced.

Mitigation for NEPA purposes in this environmental impact statement is based on the park's 1999 Programmatic Agreement and includes avoidance of adverse effects or application of one or more Standard Mitigation Measures described in Stipulation VIII(A) of this Agreement. Avoidance strategies may include application of the Secretary of the Interior's Standards, design methods such as vegetation screening when placing new facilities in a historic district, and development of design standards to ensure compatibility.

In the case of archeological resources, mitigation includes avoidance of sites through design by minimizing effects through recovery of information that makes sites eligible for inclusion in the National Register. Generally, this data recovery will be based on the 1999 *Archeological Synthesis and Research Design*. In accordance with Stipulation VIII of the 1999 Programmatic Agreement, Standard Mitigation Measures may be implemented when avoidance is not feasible or prudent and the undertaking may result in an adverse effect on historic properties. Standard Mitigation Measures include documentation according to standards of the Historic American Buildings Survey/Historic American Engineering Record as defined in the October 1, 1997, Re-Engineering Proposal. The level of this documentation, which includes photography and a narrative history, would depend on significance (national, state, local) and individual attributes (individual elements of a cultural landscape, individually significant structures, etc.). When demolition of a historic structure is proposed, a select few architectural elements and objects may be salvaged for reuse in rehabilitating similar structures or added to the park's museum collection. However, only a limited number of elements and objects can be added to the museum. In addition, the story of history of alteration of the human environment, and reasons for that alteration, will be interpreted to park visitors.

According to Stipulation VII(C) of the 1999 Programmatic Agreement, effects on archeological resources are considered "not adverse" for purposes of Section 106 if data recovery is carried out in accordance with the 1999 research design. Under the revised regulations of the Advisory Council on Historic Preservation of May 18, 1999 (36 CFR 800, Protection of Historic Properties, Final Rule and Notice), data recovery is considered to be an "adverse effect." However, according to Part 800.3(A)(2) of those revised regulations, provisions of programmatic agreements in existence at the effective date of the new regulations are governed by the regulations in place when the Agreement was developed.

The National Park Service would continue to consult with culturally associated American Indian tribes according to stipulations of the Programmatic Agreement and specific agreements, such as the October 17, 1999, Agreement Between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities, to develop appropriate mitigating strategies for effects to traditional cultural resources. Such strategies could include identification of and assistance in providing access to alternative resource gathering areas, continuing to provide access to traditional use or spiritual areas, and screening new development from traditional use areas.

Visitor Experience

This impacts analysis evaluated four separate aspects of visitor experience: recreation, orientation and interpretation, visitor services, and wilderness experience. Separate methodologies have been developed for each of these impact areas. This analysis evaluated the quality characteristics of the visitor experience in terms of how they might be altered as a result of the various user capacity measures and management zone actions described in the alternatives.

Visitor experience in Yosemite National Park encompasses a broad spectrum of elements, including access to and availability of recreational opportunities, orientation and interpretation programs, various visitor services, and access to the Yosemite Wilderness. In addition, every individual visitor to Yosemite brings unique expectations and thus each has a unique experience. This Revised Merced River Plan/SEIS identifies, where possible, how the quality of the

experience would change given application of potential management actions discussed in each of the action alternatives.

Developing a quantitative analysis of potential effects on visitor experience is not feasible because of the programmatic nature of this plan. Analysis of effects is therefore qualitative, and professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts.

Recreation

Assumptions for the recreation analysis are based on visitor studies conducted over the last several years (Manning et al. 1999a, b; ORCA 2000). The assumptions that framed the analysis included the following:

- Under all alternatives, visitor demand would increase in all areas between 1999 and 2020.
- The visitor preference for use of private vehicles to access the park would not change.
- Lodging and camping facilities damaged and removed as a result of the January 1997 flood would not be replaced in the same place they were previously located.
- Under the No Action Alternative, there would be no change in access to the Yosemite wilderness areas and no change to the wilderness permit system.
- Under the No Action Alternative, stock use would continue as currently managed.
- A diverse range of recreational activities is desirable.
- Most visitors to the Valley feel that traffic congestion and crowding reduce the quality of visitor experience.

The analysis was based on whether there was a complete loss of a recreational opportunity, a change in access to or availability of a recreational opportunity, or a change in the aggregate of recreational opportunities for the visitor. This analysis evaluated how potential management activities under the various alternatives would affect recreation opportunities available in all segments of the Merced Wild and Scenic River within Yosemite National Park. The range of recreational opportunities includes floating, swimming and wading, hiking, backpacking, camping, rock climbing, fishing, sightseeing, photography, nature study, bicycling, and stock use.

Orientation and Interpretation

The impact analysis was based on whether there would be a change in the availability of the existing range of interpretation programs and orientation/information sources and services throughout the park resulting from potential management actions for each alternative.

Visitor Services

The analysis identified how potential management actions under the various alternatives would affect visitor services provided by the National Park Service, and the park partners, including the primary park concessioner. The services analyzed include all campgrounds (i.e., Merced Lake Backpackers Campground, Moraine Dome Backpackers Campground, Little Yosemite Valley Backpackers Campground, Camp 4, North Pines Campground, and Upper and Lower Pines Campgrounds), lodging (i.e., Yosemite Lodge, the Merced Lake High Sierra Camp, Housekeeping Camp, The Ahwahnee, Curry Village, and the Wawona Hotel), and food service and retail outlets in the Valley and in Wawona.

Wilderness Experience

Impact analysis associated with wilderness experience was based on whether there would be a change in opportunities for solitude and primitive recreation for visitors in the wilderness, and/or a change in the ability of the visitor to access the Yosemite Wilderness.

Impact Assessment

The assessment of potential impacts focused on the context, intensity, and duration of impacts that would result from the proposed management actions described for each alternative, relative to the four aspects of visitor experience, and whether those impacts were considered to be beneficial or adverse to visitor experience. The assessment looked specifically at whether access to or availability of some aspect of visitor experience would be altered.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or impacts specific to the river corridor, including the El Portal Administrative Site. Regional impacts would be impacts on the affected region, which is defined in Chapter IV, Affected Environment.

Intensity. The intensity of the impact considers whether the impact to visitor experience would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable to the visitor and therefore expected to have no discernible effect. Minor impacts were effects that would be slightly detectable, though not expected to have an overall effect on the visitor experience. Moderate impacts would be clearly detectable to the visitor and could have an appreciable effect on the visitor experience. Major impacts would have a substantial, highly noticeable influence on the visitor experience and could permanently alter access to and availability of various aspects of the visitor experience.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration or association with transition types of activities. It is not likely that there would be temporary visitor experience impacts associated with this plan. A long-term impact would have a permanent effect on the visitor experience, such as the permanent closure of a campground.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to visitor experience. Beneficial impacts would allow greater access to or availability of a recreational opportunity, interpretation or orientation program, other visitor services, or to a wilderness experience. Adverse impacts would reduce access to or availability of these four aspects of visitor experience.

Social Resources

Land Use

For the purposes of an environmental analysis under NEPA and National Park Service guidelines on NEPA policies, land use within Yosemite National Park has the sole designation of public parklands. From the NEPA perspective, the public parklands land use designation includes the myriad of uses that may occur in a public park, including camping, hiking, parking, etc. Although the National Park Service is re-evaluating the management zoning in the El Portal segment of the Merced River corridor in the action alternatives, the management zones only designate

management direction for particular areas within the park and do not change the basic land use of the park. This Revised Merced River Plan/SEIS addresses only the management of lands under National Park Service control within Yosemite National Park and the El Portal Administrative Site. The basic designation of land use for the park, as defined by NEPA, would not change as a result of implementing any alternative of this Revised Merced River Plan/SEIS.

The land use analysis assumes that National Park Service policy concerning the acquisition of private lands within or adjacent to the park would not change. Thus, there would be no difference in land use policies between the No Action Alternative and the action alternatives.

Impact Assessment

Proposed management actions under each alternative were evaluated in terms of the context, intensity, and duration of land use impacts, and whether the impacts were considered to be beneficial or adverse to existing land use patterns.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur at specific locations within the park. Regional impacts would be related to regional land use patterns. For the purposes of this document, it was assumed that land use impacts would be consistently local.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on land use patterns or land use compatibility. Minor impacts were effects on land use patterns that would be slightly detectable but would not be expected to have an overall effect on those conditions. Moderate impacts would be clearly detectable and could have an appreciable effect on land use patterns or result in land use incompatibility. Major impacts would have a substantial, highly noticeable land use incompatibility or would result in substantial changes to land use patterns.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of activities. A long-term impact would have a permanent effect on land use patterns or land use compatibility.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to land use patterns. Beneficial impacts would improve compatibility among land uses. Adverse impacts would negatively alter land use patterns or result in new land uses that would not be compatible.

Transportation

The focus of this impact assessment was on the effect of potential management actions on traffic volumes and associated traffic flow and safety conditions. It was assumed that current alternative transportation services (regional public transit, shuttle buses, or Valley floor tours, etc.) would remain essentially unchanged under this plan. Given the programmatic nature of this plan, it was assumed that the plan would not result in any substantial, quantifiable construction activity. It was also assumed that the park would continue to implement restricted access to Yosemite Valley during peak season periods when criteria for implementation were met.

Quantitative analysis of potential effects was not feasible for this impact assessment due to the programmatic nature of the plan. Rather, analysis of effects was qualitative, and professional transportation engineering judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. When possible, mitigation measure(s) were incorporated into the plan to reduce the intensity of adverse effects.

Traffic Flow Conditions

This section assessed potential changes in traffic volumes associated with changes to in-park visitor accommodations and/or parking facilities that could result from implementation of management action described for each alternative. Changes in traffic volumes were then judged as to whether they would substantially change the levels of congestion on the roadway system serving Yosemite National Park.

Traffic Safety/Conflicts

This section assessed potential changes in parking facilities (location and number of parking spaces) that could result from implementation of management actions for each alternative. Possible changes in parking availability (e.g., parking supply could be reduced, with resulting unmet parking demand being accommodated by visitors parking their vehicles at roadside locations) were then judged, in the context of prevailing traffic volumes, as to whether increased roadside parking would substantially affect the potential for traffic conflicts.

Impact Assessment

Proposed management actions for each alternative were evaluated in terms of the context, intensity, and duration of the transportation impacts, and whether the impacts were considered to be beneficial or adverse to traffic flow or traffic safety conditions.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or specific to the river corridor, including the El Portal Administrative Site. Regional impacts would be impacts on regional highways providing access to the park.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on traffic flow or traffic safety conditions. Minor impacts were effects on traffic flow or traffic safety conditions that would be slightly detectable but would not be expected to have an overall effect on those conditions. Moderate impacts would be clearly detectable and could have an appreciable effect on traffic flow or traffic safety conditions. Major impacts would have a substantial, highly noticeable influence on traffic flow or traffic safety conditions and could permanently alter those conditions.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of activities. A long-term impact would have a permanent effect on traffic flow and/or traffic safety conditions.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to traffic flow or traffic safety conditions. Beneficial impacts would improve traffic flow and traffic safety by reducing levels of congestion and occurrences 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.

Scenic Resources

The scenic resources analysis assumes that any management action taken under each alternative would conform with the National Park Service 1916 Organic Act. For the purposes of this analysis, management actions for each alternative would be assumed to have an impact (negative or beneficial) on scenic resources if they:

- Introduce into or remove from the visual landscape any human-built structure or infrastructure, as it is viewed from within the Merced River corridor
- Substantially change the quality of the visual landscape, whether foreground, intermediate ground, or background
- Affect perceived viewer sensitivity, which is a function of the extent to which viewer activity is dependent on visual quality. This would include the viewer's experience in seeing any single viewpoint and in moving through a sequence of viewpoints, such as would be experienced in hiking along the river

The scenic resources analysis is confined to an examination of the physical effects on viewsheds and on physical attributes of landscape features that define important views. The ability of a visitor to enjoy a particular visual landscape or sequence of landscapes also is affected by the quality of the air between the viewer and the landscape. The effect of air quality on visual resources, specifically visibility, is examined in the air quality section.

Impact Assessment

The overriding management purpose of any national park, as defined by the National Park Service 1916 Organic Act, is to conserve the scenery and natural and historic objects. Following this direction, the National Park Service determines impacts on scenic resources by examining the potential effects of each alternative on both the physical component (any change to the landscape character and/or features) and with respect to how that change is experienced (any change in visibility, viewpoints, etc.).

Impacts of the various alternatives and the associated management actions on visual resources are examined and determined by:

- Comparing the existing visual character of the landscape, characterized in terms of the color, textural scale, and formal attributes of landscape components and features, and the degree to which potential management actions under each alternative would affect (i.e., contrast or conform with) that character
- Analyzing changes in experiential factors, such as whether a given action would result in a visible change, the duration of any change in the visual character, the distance and viewing conditions under which the change would be visible, and the number of viewers that would be affected

Scenic resources impacts consist of a substantial change that would: (a) change existing landscape character, whether foreground, intermediate ground, or background, and be visible from viewpoints the National Park Service has established as important; (b) change access to historically important viewpoints, or a sequence of viewpoints; or (c) change the visibility of a viewpoint or a sequence of viewpoints.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts are site-specific to the scenic resource. Therefore, it was assumed that all scenic resource impacts would be local.

Intensity. Impacts are classified as negligible, minor, moderate, or major. The intensity of the impact depends both on the extent of the physical effect and the duration of that effect. A negligible impact would be barely perceptible and confined to a limited viewpoint. A minor impact would result in little change in existing landscape character and minor and temporary effects on viewers. A moderate impact would be noticeable to the viewer from one or more scenic viewpoints. A major impact would cause a substantial change in landscape character, a permanent change in access to viewpoints or sequence of viewpoints, or a permanent and substantial effect on visibility of a viewpoint or sequence of viewpoints.

Duration. The duration of the impact considers whether the impact would occur in the short term (e.g., temporary) or the long term (e.g., permanent).

Type of Impact. Impacts were evaluated in terms of whether the impact would be beneficial or adverse to the scenic resource. Beneficial impacts would improve the scenic resource. Adverse impacts would degrade the scenic resource.

Socioeconomics

The impacts analysis evaluated four separate socioeconomic areas: the social environment, visitor populations, the regional economy, and the primary park concessioner. Separate methodologies have been developed for each of these impact areas.

It is assumed that park overnighters who are potentially displaced from lodging in the park under the action alternatives would instead stay in the gateway communities as local overnighters. It is further assumed that in the short-term, some displaced park overnighters who may wish to lodge overnight in the region (as local overnighters) may not be able to due to a lack of lodging capacity in the gateway region, particularly during the peak season. In the long term, however, it is assumed that the regional lodging market would respond to visitor demand, and those displaced park overnighters would become local overnighters.

Quantitative analysis of potential effects on socioeconomic conditions was not feasible due to the programmatic nature of the plan. Rather, analysis of effects was qualitative, and professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. When possible, mitigation measures were incorporated into the plan to reduce the adverse effects of socioeconomic impacts.

Social Environment

This section analyzed potential changes to the social environments of the communities of Yosemite Valley, El Portal, and Wawona, including housing, employee commute, community amenities, and recreational opportunities associated with the potential management actions under each of the action alternatives.

Visitor Populations

The analysis identified potential changes in park visitor accommodations that could result from implementation of management actions under each alternative. This section described changes in

the composition of Yosemite visitors (e.g., park overnighters, local overnighters, and day visitors) and qualitatively addressed potential changes in visitor spending.

Regional Economy

This section qualitatively analyzed the impacts of changes in visitor spending and shifts in employment associated with the potential limits on park accommodations and other facilities. Due to the qualitative nature of the analysis, these impacts were addressed in terms of the affected region as a whole, and not at the individual county level.

Concessioner

The analysis identified how potential management actions under each alternative would affect facilities operated by the primary park concessioner. The analysis assumed that these facilities could be removed or reduced, and analyzed the impact on concession revenues.

Impact Assessment

Proposed management actions under each alternative were evaluated in terms of the context, intensity, and duration of the socioeconomic impacts, and whether the impacts were considered to be beneficial or adverse to the socioeconomic environment.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or specific to the river corridor, including El Portal. Regional impacts would be impacts on the affected region, which is defined in Chapter IV, Affected Environment.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on the socioeconomic environment. Minor impacts were effects on the socioeconomic environment that would be slightly detectable but would not be expected to have an overall effect. Moderate impacts would be clearly detectable and could have an appreciable effect. Major impacts would have a substantial, highly noticeable influence on the socioeconomic environment and could permanently alter the socioeconomic environment.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of activities. A long-term impact would have a permanent effect on the socioeconomic environment.

Type of Impact. Impacts were evaluated in terms of whether the impact would be beneficial or adverse to the socioeconomic environment. Beneficial socioeconomic impacts would improve the social or economic conditions in the park or in the affected region. Adverse socioeconomic impacts would negatively alter social or economic conditions in the park or in the affected region, or would affect low-income populations.

Park Operations and Facilities

Impacts associated with potential management actions taken under each alternative were determined by examining:

- Direct changes to staffing requirements, and policies associated with park operations

- Indirect effects of park operations staffing, such as effects on utility and roadway infrastructure, flooding, and provision of utilities, especially potable water and sewer services
- Direct increases in energy use and conservation policies caused by changes in park operations staffing, or policies

Impact Assessment

Potential management actions for each alternative were evaluated in terms of the context, intensity, and duration of impacts to park operations and facilities, and whether the impacts were considered to be beneficial or adverse to park operations and facilities.

Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within Yosemite National Park or specific to the river corridor, including El Portal. Regional impacts would be impacts that occur throughout the Sierra Nevada region. For the purposes of this analysis, it was assumed that all impacts would be local.

Intensity. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and that would have no discernible effect on park operations and facilities. Minor impacts were effects on park operations and facilities that would be slightly detectable but would not be expected to have an overall effect on the ability of the park to provide services and facilities. Moderate impacts would be clearly detectable and could have an appreciable effect on park operations and facilities. Major impacts would have a substantial, highly noticeable influence on park operations and facilities and include those impacts that would reduce the park's ability to provide adequate services and facilities to visitors and staff.

Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of activities. A long-term impact would have a permanent effect on park operations and facilities.

Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse to park operations and facilities. Beneficial impacts would improve park operations and/or park facilities. Adverse impacts would negatively affect park operations and/or facilities and could impede the park's ability to provide adequate services and facilities to visitors and staff.

Alternative 1: No Action

Natural Resources

Geology, Geohazards, and Soils

Analysis

Under Alternative 1, park would implement existing user capacity program, including the elements of the Merced River Plan (boundaries, classifications, Outstandingly Remarkable Values [ORVs], management zoning prescriptions, and River Protection Overlay), legal mandates, the *General Management Plan*, and other park policy documents. Geologic processes/conditions ORVs include the mature, meandering nature of the Merced River through Yosemite Valley, a classic V-shaped river through the gorge, evidence of ice-age glaciation (U-shaped and hanging valleys), extraordinary granite features (e.g., exfoliation domes), and the transition from igneous to metasedimentary rocks in the El Portal area. The following discussion provides an overview of the types of geologic impacts that could occur within the Merced River corridor under Alternative 1 in 2020 compared with existing conditions.

Rockfall Hazards. Rockfalls can be expected throughout Yosemite National Park in any area that has steep rock cliffs. Under Alternative 1, mass movement from unstable rock slopes would continue to result in rockfalls, debris flow, and rock avalanches, exposing visitors to potential injury and facilities to damage. Along the Merced River, rockfalls can occur in the upper wilderness reaches, along the edges of Yosemite Valley, within the gorge, and along the South Fork where the river is contained within canyons. Most rockfalls are associated with triggering events such as earthquakes, climatic changes such as rainfall events, or gradual stress release and exfoliation of the granite. Incidents of injury to visitors and damage to facilities from rockfall hazards are most likely to occur in the developed valley and canyon areas of the Merced River and South Fork corridor, such as in Yosemite Valley, the Merced River gorge along the El Portal Road, El Portal Administrative Site, and possibly in Wawona. The risk of rockfalls to visitors and facilities is considered low in the less-traveled and undeveloped wilderness areas, although rockfalls do occur throughout the park. Facilities located within proximity of the talus zone or within the rockfall shadow zone are most susceptible to damage from rockfalls. Rockfall frequency in the talus zone can be yearly to every several decades; risks posed by rockfalls include casualties and structural damage. Avoiding all rockfall-related risk is not possible, especially in narrow, steep valleys or canyons. The configuration of the Yosemite Valley walls and relatively narrow canyons suggest there are no “safe” areas within areas susceptible to rockfall risks (USGS 1998).

In the short term, management of user capacity in the river corridor under Alternative 1 would have no impact related to rockfall hazards. Current park management policies and the *Yosemite Valley Geologic Hazard Guidelines* (Appendix C in NPS 2000e), which require most new facilities and uses to be placed outside the talus zone and the rockfall shadow zone, would continue to be implemented, and levels of visitation would be similar to existing levels. Therefore, there would be no discernible increase in exposure of visitors or facilities to rockfall hazard. In the long term, however, visitation levels under Alternative 1 could reasonably be expected to increase until facility or utility capacities were reached. Such an increase would result in an increase in the number of park users exposed to rockfall hazards. Long-term impacts associated with an increase in the number of visitors exposed to rockfall hazards would be local, negligible to minor depending on future visitation levels), and adverse.

Seismic Hazards. Yosemite National Park is susceptible to earthquake ground shaking generated in seismically active zones on the east and west margins of the Sierra Nevada. Historically, seismic events in the Sierra Nevada and Yosemite National Park have been relatively infrequent; however, when they do occur, the resultant ground shaking is capable of triggering rockfalls and producing ground accelerations that are higher than some older, less structurally stable buildings can tolerate. Typically, risks of injury to visitors and damage to facilities from seismic events would be relatively greater in the developed portions of Yosemite National Park, such as Yosemite Valley, El Portal, and Wawona, compared with less developed and more remote areas. Buildings and other facilities placed within saturated alluvial soil could also be susceptible to secondary hazards from seismic ground shaking, including liquefaction and seismically induced settlement. Earthquakes are unavoidable, and those in the Sierra Nevada region would continue to expose visitors to potential hazards from ground shaking.

In the short term, management of user capacity in the river corridor under Alternative 1 would have no impact related to seismic hazards. Current park management policies and the *Yosemite Valley Geologic Hazard Guidelines* would continue to be implemented, and levels of visitation would be similar to existing levels. Therefore, there would be no discernible increase in exposure of visitors or facilities to seismic hazards. In the long term, however, visitation levels under Alternative 1 could reasonably be expected to increase until facility or utility capacities were reached. Such an increase would result in an increase in the number of park visitors who would be exposed to the effects of seismic ground shaking in the event of an earthquake. Long-term impacts associated with an increase in the number of visitors exposed to seismic hazards would be negligible to minor (depending on future visitation levels), and adverse.

Impacts to Soils. Management zoning prescriptions, implementation of the River Protection Overlay, protection of certain biological ORVs, implementation of the trailhead quota system, and other management tools implemented or available under Alternative 1 would continue to protect soils from excessive disturbance, erosion, or compaction along most of the 81-mile river corridor. However, visitor use in certain areas of Yosemite National Park can adversely affect soils by contributing to erosion, soil compaction, and removal of surface soils. Compaction of native soils can result from concentrated visitor use in localized areas or excessive vehicular traffic in unpaved areas. Excessive surface water runoff or loss of protective vegetation cover can cause erosion. Under management zoning for Alternative 1, specific segments of the Merced River, especially those zoned Developed (3A-3C), would continue to be subjected to such concentrated visitor use, resulting in continued erosion and compaction in these areas. Visitor use in the upper wilderness reaches and undeveloped areas adjacent to the main stem and South Fork of the Merced River would continue to be less concentrated and limited by the existing trailhead quota system, management zoning, and other applicable park management plans and guidelines; therefore, concentrated visitor use would not intensify impacts to soil resources in these areas. In addition, under Alternative 1, areas within and adjacent to the river corridor that have been restored and rehabilitated could be closed under the authority of the Superintendent's Compendium. Park management could also take certain actions under the user capacity program in response to data showing the need to protect resources (for example, closing a beach to commercial raft removal to protect the riverbank). Protection of certain biological ORVs within the River Protection Overlay, such as riverine and wetland habitat, also serve to protect soils in these areas. However, current use of well-developed and well-traveled areas within the park would continue to cause erosion and compaction. Continued river access would result in increased erosion, removal of vegetation, and decreased soil stability.

Under Alternative 1, existing management policies would continue to be implemented, and, in the short term, levels of visitation would be similar to existing levels. In the short term, current management of user capacity in the river corridor outside El Portal would have a negligible adverse impact due to the incremental effects of ongoing concentrated use with respect to soil erosion and compaction. In the long term, visitation levels under Alternative 1 would be expected to increase until facility or utility capacities were reached. However, no increases would occur within wilderness areas because the trailhead quota system would remain in effect. Such an increase would exacerbate the adverse effects of concentrated visitor use on park soils in certain areas zoned for relatively high use. Existing policies and programs to protect park resources and values under Alternative 1 would moderate the effects of future increases in park visitation in these areas and thus would reduce the extent of the adverse impact on park soils. Long-term impacts on park soils associated with an increase in the number of visitors by 2020 would be negligible to minor (depending on actual future visitation levels), and adverse.

The boundary for the El Portal segment of the river in Alternative 1 is defined by the 100-year floodplain or the River Protection Overlay, whichever is greater. Land within the boundary is zoned for Park Operations and Administration (3C) within developed areas and Day Use (2C). Under this alternative, future development could occur outside the river boundary within the El Portal Administrative Site, consistent with the legislative intent for the site. Temporary construction-related erosion could occur during periods of rain, while soil is exposed, and prior to the site restoration and cleanup phases of future projects. Erosion and soil loss typically occur immediately after initial site grading or following construction or a fill slope with exposed soil. Mitigation measures common to all alternatives (listed in Appendix B) include preparation, prior to commencement of any construction activities, of a stormwater pollution prevention plan to control erosion and sedimentation, and implementation of and compliance with all operational requirements in the plan during construction. With implementation of a stormwater pollution prevention plan during construction, erosion and soil loss associated with grading and construction activities would result in a local, short-term, minor, adverse impact. Long-term soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Implementation of the mitigation measures would reduce adverse effects on soils at the El Portal Administrative Site to negligible to minor.

Summary of Alternative 1 Impacts. Considering the unpredictable and unavoidable nature of rockfalls and earthquakes in conjunction with an expected, albeit limited, increase in park visitation over the long term, there would be a local, long-term, negligible to minor, adverse impact on public safety from geohazards, including rockfall and seismic ground shaking. Considering the ongoing effects of more concentrated visitor use that would occur in some areas of the river corridor, there would be a local, short-term and long-term, negligible to minor, adverse impact on soil resources due to erosion, compaction, and soil removal. However, current park management policies would continue to enhance and protect the geologic processes/conditions ORVs within the individual river segments.

Cumulative Impacts

Cumulative impacts related to geohazards and soil resources are based on analysis of past, present, and reasonably foreseeable future actions, in combination with potential effects of this alternative. The projects identified below include only those projects that could affect geologic resources within the Merced River corridor or in the park vicinity.

Rockfalls would remain an unavoidable and unpredictable hazard within Yosemite Valley, the gorge, and other areas along the river corridor. Actions proposed in the *Yosemite Valley Plan* would remove and relocate facilities from the base of the talus zone, consistent with the *Yosemite Valley Geologic Hazard Guidelines*. For example, plans proposed under the Curry Village and East Yosemite Valley Campgrounds Improvements and Curry Village Employee Housing projects incorporate the placement of essential, special, and standard facilities outside the base of talus and rockfall shadow zones, as appropriate. Although rockfall hazards cannot be eliminated, the *Yosemite Valley Plan* would remove the most hazard-vulnerable facilities, thereby resulting in a regional, long-term, minor, beneficial impact.

Earthquakes are unavoidable and unpredictable and represent a potentially long-term, adverse impact to public health and safety. However, past, present, and reasonably foreseeable future actions would result in a local, long-term, minor, beneficial cumulative impact to public health and safety with respect to seismic hazards, due to the efforts of the National Park Service to apply current building codes and consider geologic and seismic hazards in planning and management activities. These efforts protect site facilities in areas that could be directly affected by ground failure.

Although certain past, present, and reasonably foreseeable future projects proposed within the park and vicinity would increase soil degradation during construction activities or due to increased development, many park projects, especially those included in the *Yosemite Valley Plan*, contain restoration elements to protect valuable soil resources. Full implementation of the *Yosemite Valley Plan* would restore approximately 177 acres of soils, of which approximately 136 acres would be high-value resource soils. Future ecological restoration projects include the Visitor Use and Floodplain Restoration Program, which involves the ecological restoration of six campgrounds, Housekeeping Camp, and The Ahwahnee tennis court. The current ecological restoration project at Cook's Meadow involved the removal of an abandoned roadway and will be complete upon the construction of a boardwalk to provide meadow access while allowing the free flow of water in the meadow and protecting vegetation and soils. Past restoration projects included the Merced River Ecological Restoration at Eagle Creek, which involved restoration of the eroded creek channel, revegetating the creek banks, and redirecting visitor traffic to minimize bank erosion. The Lower Yosemite Fall Project removes a parking lot and restores it to natural conditions. The Happy Isles Gauging Station Bridge Removal and Cascades Diversion Dam Removal projects restored to a substantial degree the free-flowing condition in these areas, thus helping to reduce riverbank erosion. However, some cumulative actions could result in short-term or long-term degradation of soil resources; such projects include construction of campgrounds, lodging, employee housing, roadway rehabilitation projects, and other facilities. Although these types of projects could have site-specific, short-term, adverse effects (e.g., potential short-term construction erosion and soil loss), a key objective of each of these projects is to reduce soil degradation and better manage natural resources.

Although rockfalls are unpredictable and unavoidable by nature, rockfall and earthquake hazards under Alternative 1 and the cumulative projects would result in a local, long-term, minor, beneficial impact to public safety in Yosemite National Park and the El Portal Administrative Site. These beneficial effects would be the result of efforts by park management to relocate critical facilities outside the talus slope and rockfall shadow zones, to avoid construction of new facilities in these hazard areas, and to conduct appropriate geotechnical studies prior to construction of facilities on soils susceptible to seismic ground shaking. Ongoing management programs would

limit the increase in future visitation, thereby limiting the increase in the numbers of users exposed to geohazards under Alternative 1 and the cumulative projects. The overall cumulative actions in combination with Alternative 1 would result in a net regional, long-term, minor, beneficial impact on soil resources.

Impairment

Alternative 1 would have a local, short-term and long-term, negligible to minor, adverse impact on geologic resources and soils. Although soil resources are a key natural resource component within Yosemite National Park, the effect of this alternative on soils would occur in very localized areas and would not be considered severe. The extent and quality of soil resources throughout most of the Merced River corridor would remain high. Therefore, Alternative 1 would not impair geologic resources for future generations.

Hydrology, Floodplains, and Water Quality

Analysis

The following discussion provides an overview of the types of impacts to hydrology, floodplains, and water quality that could occur within each segment of the Merced River corridor under Alternative 1, the No Action Alternative. Under Alternative 1, user capacity within the river corridor would be managed as it has been in the past, as identified and described in the park's *General Management Plan* and other current park policy and guideline documents (see Table III-1). When visitor demand exceeds infrastructure capacities or when resources are being adversely affected, the park implements proactive measures and, in certain circumstances, specific restrictions to provide adequate protection for visitors and affected resources.

Impacts in Wilderness. The hydrologic processes ORV in the Wilderness segment includes the river's free-flowing character and excellent water quality. The ORV description also notes the river gradient, natural conditions (e.g., glacial remnants, a logjam in Little Yosemite Valley), and numerous cascades. Of the qualities described for the ORV, most are relatively insensitive to user-related impacts, with the exception of water quality. Water quality in the Wilderness segments is considered to be excellent.

User capacity within Wilderness segments of the Merced River would be addressed through the continued implementation of the trailhead quota system and periodic monitoring of wilderness resource conditions. If it is determined through monitoring that some areas are experiencing degradation due to overuse, park management would take proactive measures to restore resources and help prevent further damage.

In wilderness areas zoned Untrailed (1A) and Trailed Travel (1B), no new structures such as utilities, bridges (other than minor footbridges), and commercial overnight facilities are to be constructed. As such, Alternative 1 would not affect the floodplain or its ability to accommodate flood flow. Furthermore, visitation to the Wilderness segments of the river corridor is seasonal in nature and is controlled through the park's existing trailhead quota system. Visitor use in wilderness areas would continue to be limited; therefore, the effects to water quality, floodplain values, and related hydrologic processes as a result of soil compaction in the floodplain and soil erosion in wilderness areas are expected to be negligible.

Under Alternative 1, areas of more concentrated use in areas zoned Heavy Use Trail (1C) and Designated Overnight (1D) during the summer, such as along trails leading to Little Yosemite

Valley and the vicinity, Backpackers Campground, Moraine Dome, and Merced Lake High Sierra Camp, would continue to experience current use patterns. Thus, localized, long-term, negligible to minor, adverse impacts to the hydrologic processes ORV associated with a reduction in water quality (due to soil compaction in floodplain areas) and soil erosion (as a result of these use patterns) would continue in these areas.

The continued removal of up to 3,000 gallons per day of water from the Merced River to support functions at the Merced Lake High Sierra Camp during the summer when this camp is open to the public represents a very small amount of the daily flow volume of the river in this area. Therefore, this withdrawal represents a negligible impact to the river's hydrologic processes at or downstream of the point of withdrawal.

Overall, visitor use in Wilderness segments of the river is expected to continue to have long-term, negligible impacts on hydrology, water quality, and the hydrologic processes ORVs.

Impacts in Yosemite Valley. The hydrologic processes ORVs in Yosemite Valley include the river's meandering character, world-class waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes. Under Alternative 1, impacts resulting from historic bridges and other existing obstructions would continue to impede the free-flowing condition of the Merced River and subsequently alter stream processes that define channel characteristics. These restrictions to natural fluvial processes adversely affect the ability of the river to naturally discharge and dissipate channel-forming flows or flood flow. Streamflow would continue to be altered, thereby affecting the free-flowing nature of the river between the Happy Isles area and Pohono Bridge.

Beginning in the late 1800s and continuing to the mid 1900s, the Merced River floodplain was altered by development in the river corridor, particularly in the east Valley. Structural and recreational development has resulted in impervious surfaces, creation of flow barriers, and loss of vegetative cover, thus altering floodplain characteristics and the interaction between the floodplain and periods of high river flow. Under Alternative 1, the 100-year flood regime and floodplain formation and evolution, which are ORVs of the river, would continue to be altered by past developments and existing structures that were constructed prior to the river's designation as Wild and Scenic.

Visitor use has affected parts of the floodplain by compacting soils, reducing vegetative cover, altering streambanks, and inducing erosion. The continued use of streambanks and floodplains by park visitors would continue, particularly in more concentrated areas of use such as east Yosemite Valley. However, efforts by park management in more recent years have implemented numerous restoration efforts and installed boardwalks in some area, which has helped to minimize impacts to these floodplain resources.

Roadways, structures, and visitor-use areas would continue to be present in the floodplain and would be subject to flood hazards under this alternative. Executive Order 11988 on floodplain management and the *Floodplain Management Guidelines* (NPS 1993b) provide guidance for the protection of natural floodplain values and of life and property in the National Park System. For future structures, the National Park Service must avoid construction of facilities in a floodplain if alternative locations are available. Where no alternatives exist, policies allow construction of structures, such as day-visitor parking lots, picnic areas, and campgrounds, if risks to human life and property are studied and then minimized or mitigated through design. Other facilities such as medical facilities, schools, and fuel storage facilities are to be located outside the 500-year

floodplain. Therefore, under Alternative 1, existing flood hazards could remain, whereas future flood hazards would be precluded or mitigated for any new facility construction in the floodplain.

During the warmer summer months when visitor use increases, water temperatures are higher, and the streamflow is lower than at other times of the year. Water quality at times can be adversely affected through the introduction of refuse and human-associated pollutants from visitors using the river and from high visitor use along streambanks and adjacent floodplain areas, particularly during summer weekends and holidays when visitor use peaks.

Roads, parking lots, and other impervious surfaces in or near the corridor can also release nonpoint-source pollutants into stormwater runoff that would subsequently be discharged to the river. These surfaces also accumulate refuse and other pollutants discarded by park visitors that could also degrade water quality in the Valley.

Current management zoning prescriptions, coupled with the more restrictive River Protection Overlay and other existing park management policies provide restrictions on visitor use that help control certain activities in the river corridor. Restorative elements of the program allow degraded streambanks and floodplain areas to recover. As a result, the hydrologic processes, floodplain values, and water quality in the Yosemite Valley are not expected to degrade below current levels.

Impacts in the Gorge. The hydrologic processes ORV for the Gorge segment is characterized by an exceptionally steep river gradient. The river in the Gorge is, in most places, difficult for visitors to safely access and has limited or no floodplain areas. These features are insensitive to visitor uses, and Alternative 1 would have no impact on this ORV.

Facilities and visitor use in the majority of the Gorge segment are minimal due to the topography and limited access. In addition, the river's steep gradient makes use of the river by visitors dangerous, even in periods of lower river flow. However, water quality and the hydrologic processes would continue to be adversely but negligibly affected by existing facilities, adjacent roads, turnouts, stormwater runoff, and riprap. These adverse impacts are expected to be slightly greater in the summer, when river flows are lower and visitor use is higher. Impacts to floodplains, water quality, and hydrologic processes in these areas would continue to be localized and long-term but negligible.

Impacts in El Portal. The hydrologic processes ORV for El Portal are related to the seasonally continuous rapids in that segment. This ORV is not readily affected by the river corridor boundary, the management zoning, or visitor use.

In El Portal, a bulk storage facility for petroleum fuels and a gas station would continue operation, as would transportation of fuels along Highway 140 adjacent to the river. The risk of a fuel release would remain, but would be mitigated by compliance with standard regulatory requirements for the transportation and storage of such materials and normal park operations and maintenance procedures. A release of fuel would constitute a short-term, adverse impact to water quality.

The river corridor boundary for the El Portal segment is drawn at the River Protection Overlay or the 100-year floodplain, which ever is greater. The current management zoning includes Park Operations and Administration (3C) (56 acres) and Day Use (2C) (137 acres). This boundary and zoning plan allows additional development or redevelopment within the areas zoned 3C. This

could result in a loss of vegetation, soil compaction, and/or paving, with a potential for increased erosion and increased runoff from developed areas, and local, long-term, minor, adverse effects on hydrology and water quality. In addition, some development could occur within the floodplain, resulting in a local, long-term, minor, adverse effect on floodplain values.

Impacts in Wawona. The impoundment near Wawona has excellent water quality, which is a hydrologic processes ORV. The Wawona segments do not represent a hydrologic processes ORV, but the Below Wawona segment includes the free-flowing condition of the river and continual whitewater cascades which are ORVs. The ORVs for the below Wawona segment are not readily affected by visitor use and these features would continue to be protected under Alternative 1.

Until the historic Wawona Bridge (also called South Fork Bridge) and the temporary bridge are removed and replaced with a bridge designed to not impede the river flow (construction on a new bridge is scheduled to occur in 2005), these structures will continue to restrict the free-flowing conditions of the river and subsequently alter stream processes that define down-river channel characteristics. This will result in localized, minor to moderate, long-term, adverse effects to the hydrologic processes ORV at this location along the South Fork. Existing park management policies and elements of the existing Merced River Plan help ensure that the hydrologic processes ORVs are being protected and enhanced on a segment-by-segment basis for the Merced River corridor.

Summary of Alternative 1 Impacts. Hydrologic processes, floodplain values, and water quality are not expected to degrade below current levels; therefore, potential impacts of Alternative 1 to the hydrologic processes ORV in the river corridor are expected to be negligible.

Cumulative Impacts

Cumulative effects on hydrology, floodplains, and water quality are based on an analysis of past, present, and reasonably foreseeable actions in the vicinity of the Merced Wild and Scenic River corridor in combination with potential effects of this alternative.

Past Actions. The Merced River has been historically affected by a variety of projects that have introduced obstructions along its banks or into the river corridor; these obstructions have restricted river flow, modified the floodplain, and in some cases adversely affected water quality. The recent removal of the Happy Isles Gauging Station Bridge in east Yosemite Valley and the Cascades Diversion Dam in the Merced River gorge have substantially improved the free-flowing condition of the river and represent a cumulative, long-term, beneficial impact to the hydrologic processes ORV in these areas. However, the free-flowing condition of the Merced River has been adversely altered by the placement of fill and riprap to widen and stabilize segments A, B, and C of the El Portal Road in the gorge.

Present Actions. Utility infrastructure in east Yosemite Valley (primarily water and sewer lines) that is located in sensitive areas within the river corridor will be removed or abandoned in place; these utilities will be consolidated and realigned beneath roadways in many areas. In addition, numerous sewer lines that are currently exposed will be removed from the bed and banks of the river, reducing the potential for accidental discharges of sewerage to the river. This project will provide a cumulative, long-term, beneficial impact to the hydrologic processes ORV in the Valley.

The replacement of the South Fork Bridge near Wawona and the removal of the temporary bridge will remove abutments and piers from the bed and banks of the river. The new bridge has been

designed to not impede the free-flowing condition of the South Fork and represents a cumulative long-term, beneficial impact to the hydrologic processes ORV Wawona.

Reasonably Foreseeable Future Projects. The *Yosemite Valley Plan* calls for numerous projects to be implemented within the river corridor Yosemite Valley, including the following:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Yosemite Lodge Area Redevelopment
- Yosemite Village Interim Parking Improvements
- Visitor Use and Floodplain Restoration Program Project
- El Portal Old Wastewater Treatment Facility Removal

Although these projects could have site-specific, minor, short-term, adverse effects (e.g., construction-related effects on water quality), the general goal of these projects is to increase coordinated resource management, restore sensitive ecosystems, and remove, redesign, and/or improve existing infrastructure. In addition to those projects listed above, reconstruction of Segment D of El Portal Road could cause similar types of short-term, construction-related impacts as occurred during the construction of segments A, B, and C (e.g., effects on water quality). However, adverse impacts associated with Segment D reconstruction could be partially mitigated through project design (the design of Segment D would need to protect and enhance the ORVs of the Merced River in this area) and implementation of Best Management Practices, compliance monitoring, and restoration activities. Each of the above reasonably foreseeable future projects will be designed and constructed compliant with Wild and Scenic Rivers Act requirements related to user capacity elements, river boundaries, management zoning prescriptions and ORV protection and enhancement as defined in the final Merced Wild and Scenic River Comprehensive Management Plan.

Therefore, these reasonably foreseeable future actions, in combination with Alternative 1, could have a net long-term, local, minor, beneficial effect to the hydrologic processes ORVs of the Merced River corridor.

Impairment

Impacts to hydrology, floodplains, and water quality associated with Alternative 1, as well as the hydrologic processes identified for the various segments of the river corridor, are expected to be negligible to minor. Therefore, Alternative 1 would not impair the hydrologic resources of the park for future generations.

Wetlands

Analysis

The following discussion provides an overview of the types of impacts to wetland resources that could occur within each segment of the Merced River corridor under Alternative 1.

Biological ORVs common to the entire Merced River (main stem and South Fork) include riverine habitats, such as riparian forests, meadows, and the aquatic environment. Under Alternative 1, park use would, in the short term, continue consistent with existing conditions. Implementation of the management elements adopted in the Merced River Plan would provide protection and a management framework for river-related wetland resources. However, without the benefit of the VERP program, the expected long-term increases in park use outside the wild

segments of the river could result in adverse impacts to wetland resources. Wetlands in localized areas (i.e., near facilities or other high-use areas) would continue to be negatively affected by existing development and human and stock use. In general, existing development (most of which is historic, such a road systems) would continue to adversely affect wetlands. Future development allowed under Alternative 1 would also have a limited potential for adverse effects on wetlands, although such effects would be minimized by compliance with existing policies, guidelines, and restrictions pertaining to wetland protection (see Chapter III). Development in wetlands could fragment habitat and impose unnatural barriers to plant and wildlife movements, thereby adversely affecting seed sources, nutrients, and plant dispersal and distribution patterns. Other types of adverse effects associated with human and stock use include local degradation of water quality (e.g., through the introduction of refuse, fecal coliform bacteria, and other human- and stock-associated pollutants), and potential introduction or spread of noxious weeds. Grazing, trampling, and soil compaction and erosion can result in the loss of soil structure, vegetation diversity, and plant productivity. These continued actions would have long-term, local, adverse effects on wetlands in the vicinity of facilities and areas of concentrated use. The degree to which wetlands would be affected depends on their proximity to facilities and high-use areas, as well as their sensitivity to perturbation. Thus, wetland resources could be positively affected by localizing facility- and use-related impacts away from more sensitive areas. Under Alternative 1, current park management tools, including the Merced River Plan management zoning and a variety of wetlands policies and guidelines, provide mechanisms for such actions.

Impacts in Wilderness. Wetland and aquatic habitats of the upper Merced River and the Wilderness segments of the South Fork are generally intact. However, some adverse effects on wetlands resources have occurred in areas where visitor use is intense (e.g., in the vicinity of the Little Yosemite Valley Backpackers Campground, Moraine Dome Backpackers Campground, Merced Lake High Sierra Camp and Backpackers Campground, and along major trail routes).

The biological ORVs of the Wilderness segments of the Merced River include high riparian species diversity, wetlands themselves, riparian areas that are intact and largely undisturbed by humans, and a nearly full range of riverine environments typical to the Sierra Nevada. Management zoning in the upper main stem of the Merced River and the South Fork above Wawona reflects existing management practices and use levels based on the Wilderness Act along with federal and Yosemite National Park wilderness policies and guidelines. Existing wilderness trailhead quotas limit user capacity for wilderness areas of the park. Wilderness zoning severely limits the type of new facilities (thus serving to limit user capacity) that could be built under the No Action Alternative. For example, large campsites with facilities are prohibited in zone 1B. Although future actions such as trail rehabilitation could occur under the current zoning, any proposed actions would be subject to the consistent set of criteria and considerations (including the Section 7 determination process) mandated by the Wild and Scenic Rivers Act, which would guide how the actions could be implemented. While impacts in high use areas would continue, most wilderness areas would remain relatively untouched. Under Alternative 1, wilderness user capacity limits would not change, and the current wilderness monitoring system would remain in place. Therefore, implementation of Alternative 1 is expected to result in only local, long-term, negligible, adverse effects on wetland resources in Wilderness segments. On a segment-wide basis, wetland resources throughout the wilderness segment would be protected and enhanced.

Impacts in Yosemite Valley. The size, structure, productivity, and continuity of wetland habitats (within wetlands and between wetland and riverine habitat) and aquatic habitats within Yosemite

Valley have been affected over time by existing facilities and visitor use. Existing facilities such as roads, bridges, and ditches drain wet meadows, fragment the floodplain, and have adverse effects on wetland and aquatic habitats by imposing unnatural barriers to plant and wildlife movements, which in turn may accelerate both the drying of wetland habitats and conifer encroachment of wet meadow and riparian communities. These facilities were, for the most part, constructed many years prior to the Merced River's designation as Wild and Scenic. Existing roads, parking lots, and other impervious surfaces in or near the corridor are nonpoint sources of pollutants that discharge to low-lying wetlands as well as the aquatic habitat of the Merced River and its tributaries. Impervious surfaces accumulate automobile-related pollutants, refuse, and other nonspecific pollutants that are easily transported to adjacent or nearby wetland resources through stormwater runoff.

ORVs within Yosemite Valley include riverine habitats such as riparian forests, meadows, and the aquatic environment of the Merced River. Yosemite Valley is currently zoned to protect natural resources while providing a diverse visitor experience. Although large portions of the east Valley could remain developed under current zoning, the overall zoning (including the River Protection Overlay) of Yosemite Valley protects sensitive resources within the river corridor boundary (e.g., unique wetlands are zoned 2A, Open Space, which restricts activities and prohibits development of new roads and campgrounds). Valley zoning precludes several types of new development (e.g., new campsites are prohibited in the 2B, Discovery zone) where wetlands are located, while allowing such development in other zones. In addition, future actions (e.g., bridge removal, construction of new campsites) that could occur under the current zoning would be subject to the management elements adopted in the Merced River Plan, which guide how the actions could be implemented. The application of current zoning in combination with the other management elements adopted in the Merced River Plan would have short- and long-term, negligible, beneficial effects on wetlands and the biological ORVs in the Valley. However, the expected increase in park use under Alternative 1, combined with a lack of systematic monitoring, could result over time in local, long-term, minor, adverse effects on wetland resources and the biological ORVs in the Valley.

Impacts in the Gorge. Direct visitor intrusion into the majority of riparian areas of the Gorge segment has been and would continue to be minimal due to topography and inaccessibility. Biological ORVs of the Gorge segment include diverse riparian areas that are largely intact and relatively untouched by humans. The majority of the Gorge segment is zoned 2A, 2A+, and 2B, with less acreage zoned as 2C and 2D (the Cascades area). With the exception of the Cascades area, the majority of the gorge is relatively inaccessible, and visitor use in the gorge itself is unlikely to increase.

The riparian zone in the gorge would continue to be minimally affected by existing facilities, roads, turnouts, riprap, contaminated stormwater runoff, non-native species, and the use of nonmotorized watercraft (and associated visitor trampling at launch and removal locations). The riparian community throughout the Gorge, identified as a biological ORV, is indirectly and marginally affected by vehicle use on El Portal Road (and associated pollutants) and by non-native species. These continued effects on wetlands in the vicinity of facilities and areas of concentrated use would be long term, local, and adverse. The degree to which wetlands would be affected depends on their proximity to facilities and high-use areas, as well as their sensitivity to perturbation.

Gorge zoning under Alternative 1 precludes most types of new development (e.g., campgrounds and lodging, new roads) that have the potential to adversely affect wetlands. In addition, possible future actions that could occur under the current zoning would be subject to the consistent set of criteria and considerations adopted in the Merced River Plan as well as existing park management policies, which guide how the actions could be implemented. However, as described above, the expected increases in park use (resulting in higher traffic levels on El Portal Road and potentially higher levels of automobile-related pollutants in the area) under Alternative 1, combined with a lack of systematic resource monitoring could result in local, long-term, minor, adverse effects on wetland resources and the biological ORVs in the Gorge segment.

Impacts in El Portal. The biological ORVs of the El Portal segment include a diversity of riparian vegetation types. The total acreage included within the El Portal segment boundary under Alternative 1 would be 193 acres. This alternative would include primarily Park Operations and Administration (3C) zoning within existing developed areas and primarily Day Use (2C) zoning within undeveloped areas adjacent to the river. Of the 193 acres within the boundary, 137 acres would be zoned 2C and 56 acres (29% of the total acreage within the riparian corridor boundary) would be zoned 3C.

Examples of how the management elements of Alternative 1 would affect native wetlands and the biological ORVs of the El Portal segment are described below.

- Portions of El Portal zoned 3C (e.g., the Trailer Village, Old El Portal) would allow redevelopment as well as additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., fire suppression in the vicinity of structures), minor to moderate, adverse effects on wetlands and aquatic habitats. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to wetlands (e.g., conversion of wetland vegetation to developed facilities) would remain.
- Areas of El Portal zoned 2C, including all areas within the River Protection Overlay and the Merced River 100-year floodplain, would allow only day uses and would restrict future development to supporting facilities such as roads, parking areas, trails, and utilities. Impacts resulting from the construction of such facilities would generally be localized. Any such development would be governed by existing mandates and guidelines pertaining to the protection of wetland resources (see Appendix A). Therefore, future development in zone 2C areas could have local, minor, adverse effects on wetland resources.

The zoning in El Portal could have short- and long-term, adverse effects on wetlands as the result of future actions that could be implemented under the proposed zoning (e.g., new park administration facilities, road repair). These impacts could be reduced through the application of mitigation measures described in Appendix B. The criteria and considerations (as well as other park policies and federal laws) would protect the biological ORVs. However, the increase in administrative use of the El Portal segment that could occur under Alternative 1, combined with a lack of systematic monitoring, could result in local, long-term, minor to moderate, adverse effects on wetland resources and the biological ORVs in parts of the El Portal segment.

Impacts in Wawona. Wetland and aquatic habitats within Wawona have been affected by historic facilities and visitor use. The size, structure, and productivity of wetland habitat as well as the continuity within wetlands and between wetlands and riverine habitat have decreased due to conifer encroachment, visitor trampling, spread of non-native species, continued use of existing

development, and loss of natural drainage patterns due to roads and diversions. These effects are generally restricted to the limited areas of high visitor use within the Wawona segments and in the short term, these conditions would remain relatively constant.

In the long term, under Alternative 1, visitor use would continue to affect wetlands and aquatic habitat in high use areas by compacting soils, reducing vegetative cover, altering streambanks, and inducing erosion. Roads, parking lots, and other impervious surfaces in or near the corridor would continue to release nonpoint-source pollutants into stormwater runoff that could subsequently discharge to low-lying wetlands and the aquatic habitat of the South Fork.

Although the South Fork in Wawona has a variety of zones, ranging from 1B (Wilderness) to 3C (Park Operations and Administration), the base zones are low-intensity zones which mostly preclude new development, such as interpretive centers, food services, campgrounds and lodging, and day-visitor parking. The Wawona Golf Course and Wawona Picnic Area (2C), Wawona Campground (3A), Wawona Hotel (3B), and the Wawona maintenance facility (3C) allow a range of more intensive use levels consistent with existing development and uses. The zoning and continued use of these already developed sites is not expected to adversely affect local wetland resources.

Facilities within the River Protection Overlay, such as portions of the Wawona Campground and a portion of the Wawona maintenance facility would be inconsistent with the River Protection Overlay and could be removed or relocated. Local, short-term, negligible to minor, adverse effects to wetlands could occur if facilities were removed from the River Protection Overlay. These adverse impacts could be reduced to a negligible intensity by application of mitigation measures described in Appendix B. In the long term, facility removal could increase opportunities for natural revegetation and restoration of riparian habitat, resulting in a long-term, minor, beneficial impact on streamside (wetland) vegetation, a biological ORV for the Wawona segments.

Overall, the increase in park use under Alternative 1 combined with a lack of systematic monitoring could result in local, long-term, minor, adverse effects on wetland resources and the biological ORVs in the Wawona segment.

Summary of Alternative 1 Impacts. Compliance with existing park policies would help ensure that the biological ORVs related to wetlands are protected and enhanced. Under Alternative 1, continued application of limits on facilities development (through management zoning, the River Protection Overlay, and other Merced River Plan management elements) would allow many natural areas to remain relatively intact with continued protection and would allow restoration and enhancement of degraded native habitats. However, the expected long-term increase in park use would increase the intensity of visitor-related impacts, which, for the most part, would be restricted to areas of high intensity use (i.e., the east Yosemite Valley and El Portal). This, combined with a lack of systematic VERP monitoring, could result in local, long-term, minor to moderate, adverse effects on wetland resources and the biological ORVs in some portions of the Merced River corridor.

Cumulative Impacts

Cumulative effects to wetlands are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The

projects identified below include those projects that have the potential to affect local wetland patterns (i.e., within the river corridor) as well as wetlands parkwide.

Past Actions. Aquatic and riparian systems are the most altered and impaired habitats of the Sierra Nevada and are relatively rare in the context of the entire landscape. Wetlands in the Sierra Nevada have been drained since the earliest settlers attempted to "reclaim" meadows and other seasonally wet areas. Mountain meadows were commonly drained with the intent of improving forage conditions and to permit agriculture (Hughes 1934, as in NPS 1997b, UC Davis 1996). Development and activity in Yosemite National Park has reduced historic wet meadow acreage by 60 to 65%. Past and ongoing activities include recreational use, agriculture, and the construction of dams, diversion walls, bridges, roads, pipelines, riprap, buildings, campgrounds, and recreational features. Dams and diversions throughout most of the range have profoundly altered stream-flow patterns and water temperatures. Within the mountains, broad valleys with wide riparian areas were often reservoir sites, and much of the best former riparian habitat in the Sierra Nevada is now under water. The extent of the inundation across the range becomes apparent when one realizes that virtually all flatwater on the western slope of the Sierra Nevada below 5,000 feet is artificial (UC Davis 1996). These past actions have had long-term adverse effects on regional wetland and aquatic habitats.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint *South Fork and Merced Wild and Scenic River Implementation Plan* (NPS 1991b) for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is also a general management plan with many prescriptive goals and few actions. The plan endeavors to limit or end consumptive uses such as grazing within the river corridor and calls for the formalization of camping and launch facilities for nonmotorized watercraft. Implementation of these actions has a beneficial effect by eliminating impacts where feasible (grazing does not currently occur within the river corridor), concentrating impacts in areas able to withstand visitor use, and providing facilities that mitigate adverse effects associated with visitor use (e.g., restrooms).

A number of recently implemented projects have begun to reverse the centuries-long pattern of wetland degradation caused by localized human uses in the region. These include:

- Merced River Ecological Restoration at Eagle Creek
- Happy Isles Fen Habitat Restoration
- Cascades Diversion Dam Removal
- Happy Isles Gauging Station Bridge Removal

These projects have had local, long-term, moderate to major, beneficial effects on wetlands because they involve the restoration of previously degraded areas and thus enhance local and regional wetlands. In addition to these specific projects, one of the major goals of the *Yosemite Valley Plan*, adopted by the National Park Service in December 2000, is to restore, protect, and enhance the natural resources of Yosemite Valley. Actions set forth in the plan that result in beneficial effects on wetlands include the removal of roads, facilities, and services in the Valley (including roads through Stoneman Meadow and the southern portion of Ahwahnee Meadow, most parking areas in the east Valley, and commercial trail rides in the Valley), the relocation of employee housing out of the Valley, and the establishment of wetland restoration objectives.

Other past actions that have likely had a cumulative, beneficial effect on regional wetlands includes transportation-related projects, which have the general goals of increasing transportation options and reducing reliance on automobiles in the area. In addition, the update to the *Fire Management Plan* (NPS 2004b) seeks to improve ecosystem health and restore meadows and therefore would have a regional, long-term, moderate to major, beneficial effect on Yosemite's wetland resources throughout the Merced River corridor.

Present Actions. Present actions in the region have the potential to result in both beneficial and adverse effects on wetland resources:

- The Cook's Meadow Ecological Restoration may help reverse the centuries-long pattern of wetland degradation due to localized human uses in the region.
- Additional current projects with net long-term, minor to moderate, beneficial effects on wetland resources (resulting from revegetation and habitat restoration efforts, control of competing invasive species, and improved air or water quality) include the Happy Isles Dam Removal, Lower Yosemite Fall, Parkwide Invasive Plant Management Plan, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, South Fork Bridge Replacement, and Yosemite Valley Shuttle Bus Procurement Plan.
- Projects such as the Curry Village Employee Housing, Happy Isles to Vernal Fall Trail Reconstruction, the Yosemite Village Interim Parking Improvements, and Yosemite Motels Expansion could have short- and long-term, adverse effects on wetland resources through construction-related, operational, and maintenance actions.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have both beneficial and adverse effects; and (3) projects anticipated to have a net adverse effect.

Examples of projects that could have a cumulative, beneficial effect on regional wetlands include:

- Wawona Campground Rehabilitation
- Update to the *Yosemite Wilderness Management Plan*
- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Visitor Use and Floodplain Restoration Program

Although each of these projects may have slight local and short-term adverse effects (e.g., construction-related effects), the general goal of these projects is to increase coordinated resource management and to restore sensitive ecosystems. Therefore, these projects could have a long-term, beneficial cumulative impact to regional wetlands. For example, the update to the *Yosemite Wilderness Management Plan* could result in additional restrictions on wilderness facilities and activities, reducing site-specific erosion, trampling, and possibly stock use.

Reasonably foreseeable projects that could have mixed adverse and beneficial effects on regional wetlands include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Concept Plan
- Yosemite Lodge Area Redevelopment

Cumulative effects of these projects could be mixed, combining both adverse and beneficial effects. The net beneficial or adverse effects of these projects would be difficult to predict. For example, implementation of the El Portal Concept Plan could adversely affect wetland resources during construction (short-term effect) as well as permanently displace wetland resources in El Portal due to construction of new employee housing (long-term effect); however, removing employee housing and administrative facilities from Yosemite Valley (long-term, beneficial effect) would reduce these impacts as well as provide restoration opportunities. Adverse impacts associated with the El Portal Concept Plan could be mitigated to a lesser intensity through project design (the design would need to protect and enhance the ORVs of the Merced River), implementation of Best Management Practices, compliance monitoring, and restoration.

Reasonably foreseeable projects that could have local, adverse effects on wetlands include:

- Environmental Education Campus Development Program
- El Portal Road Improvements Project (Segment D)
- Indian Cultural Center
- Northside-Southside Drive Repaving
- Out-of-Valley Campground Plan
- Yosemite Village Interim Parking Improvements

Cumulative parkwide adverse effects would be primarily related to increased facilities and possible increases in visitor use and access. Each of the aforementioned projects has the potential to have local, minor to major, adverse effects on wetland resources during construction (short term) and through direct displacement of resources and effects of human use (long term). Examples of construction- and human-use-related effects on wetlands include direct displacement of vegetation, introduction of non-native species that invade into adjacent natural areas and displace native species, fragmentation of habitats that prevents genetic mixing, alteration of natural patterns, and increased erosion and sedimentation.

Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wetlands and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 1, could have a net local, long-term, negligible, beneficial effect on parkwide wetlands and the biological ORVs of the Merced River corridor.

Impairment

Alternative 1 would have a local, long-term, minor to moderate, adverse effect on parkwide wetlands as well as the biological ORVs of the Merced River corridor and therefore would not impair wetland resources for future generations.

Vegetation

Analysis

The following discussion provides an overview of the types of impacts to vegetation resources that could occur within each segment of the Merced River corridor under the No Action Alternative.

Biological ORVs common to the entire Merced River (main stem and South Fork) include riverine habitats, such as riparian forests, meadows, the aquatic environment, and associated plant species. Under Alternative 1, park use would, in the short term, remain consistent with existing conditions. In general, adverse ongoing impacts to vegetation are confined to areas of high concentrations of use and near developed areas. Implementation of the management elements adopted in the Merced River Plan would provide protection and a management framework for river-related vegetation resources. However, without the benefit of the VERP program, the expected increase in use over time could result in new adverse impacts to vegetation resources. Adverse effects associated with human and stock use include local degradation of water quality (e.g., through the introduction of refuse, fecal coliform bacteria, and other human- and stock-associated pollutants), and potential introduction or spread of noxious weeds. Grazing, trampling, and soil compaction and erosion can result in the loss of soil structure, vegetation diversity, and plant productivity. The intensity of these adverse effects is expected to increase over time in conjunction with increases in park use except in the wilderness segments of the river, where Wilderness quotas will remain in place (day use of some more readily accessible wilderness trails could increase). The degree to which vegetation communities would be affected depends on their position relative to facilities and high-use areas, as well as their sensitivity to disturbance. Therefore, vegetation resources could be positively affected by localizing facility- and use-related impacts away from more sensitive areas. However, under Alternative 1, without implementation of the VERP program, effects on sensitive resources would not be systematically monitored. Therefore, park managers would not be receiving consistent and reliable data to inform management and planning decisions designed to protect, restore, and enhance sensitive vegetation resources that were being adversely affected by park use levels.

Impacts in Wilderness. Vegetation in the Wilderness segments of the Merced River is generally intact, except where visitor use is intense (e.g., in the vicinity of the Little Yosemite Valley Backpackers Campground, Moraine Dome Backpackers Campground, Merced Lake High Sierra Camp and Backpackers Campground, and along major trail routes). These facilities have existed for many years, long before the river's designation as Wild and Scenic.

High riparian species diversity in the Wilderness segments of the Merced River is a biological ORV. The upper main stem of the Merced River is zoned 1A, 1B, 1C, and 1D and the South Fork above and below Wawona is zoned 1A and 1B, reflecting management practices and use levels based on the Wilderness Act along with federal and Yosemite National Park wilderness policies and guidelines. The existing trailhead quota system limits user capacity for wilderness areas of the park. Wilderness zoning significantly limits the type of new facilities (thus serving to limit user capacity) that could be built under the No Action Alternative. For example, large campsites with facilities would be prohibited in zone 1B. In addition, the wilderness monitoring system would continue to provide data on the condition of vegetation in the wilderness segments. Although possible future actions (e.g., trail rehabilitation) could occur under current zoning, all proposed actions would be subject to the management elements adopted under the Merced River Plan and WIMS monitoring. On a segment-wide basis, the biological ORVs in the Wilderness segments of Yosemite National Park would be protected and enhanced.

Impacts in Yosemite Valley. Biological ORVs within the Yosemite Valley segment include riverine habitats such as riparian forests, meadows, and the aquatic environment of the Merced River. Yosemite Valley is zoned to protect natural resources while providing a diverse visitor experience (the Valley includes 1A, 1B, 2A, 2B, 2C, 3A, 3B, and 3C zoning). Large portions of the east Valley

were developed prior to the river's designation as Wild and Scenic. Under the Merced River Plan, the overall zoning (including the River Protection Overlay) that now exists for Yosemite Valley protects sensitive resources within the river corridor boundary (e.g., unique wetlands are zoned 2A, Open Space, which restricts activities and prohibits development of new roads and campgrounds). Valley zoning precludes several types of new development (e.g., new campsites are precluded in the 2B, Discovery zone) that have the potential to adversely affect native vegetation, while allowing such development in other zones. In addition, possible future actions (e.g., bridge removal, construction of new campsites) that could occur under the current zoning would be subject to the management elements adopted in the Merced River Plan, which guide how the action could be implemented. However, future increases in park use under Alternative 1, combined with a lack of systematic monitoring or mechanisms by which to limit access or redirect visitor use in response to resource degradation, could result in local, long-term, minor to moderate, adverse effects on vegetation resources and the biological ORVs in the Valley.

Impacts in the Gorge. Biological ORVs in the Gorge segment include diverse riparian areas that are largely intact and relatively untouched by humans. The majority of the gorge is zoned 2A, 2A+, and 2B, with less acreage zoned as 2C and 2D (the Cascades area). With the exception of the Cascades area, the majority of the Gorge segment is relatively inaccessible, where visitor use is unlikely to increase over existing levels. Gorge zoning precludes most types of new development (e.g., campgrounds and lodging or new roads) that have the potential to adversely affect native vegetation. In addition, possible future actions that could occur under the current zoning would be subject to the management elements adopted in the Merced River Plan, as well as the management elements included in existing park management policies, which guide how the action could be implemented. However, the potential increase in use in parts of the Gorge segment under the No Action Alternative, combined with a lack of systematic monitoring or mechanisms by which to limit access or redirect visitor use in response to resource degradation, could result in local, long-term, minor, adverse effects on vegetation resources and the biological ORVs in the accessible portions of the Gorge segment.

Impacts in El Portal. Biological ORVs of the El Portal segment include a diversity of riparian vegetation types, as well as upland vegetation associations on the north-facing slopes of the river. The total acreage within the El Portal segment boundary under Alternative 1 would be 193 acres, which is equal to 17% of the total acreage included within the El Portal Administrative Site boundary. This alternative includes primarily Park Operations and Administration (3C) zoning within existing developed areas and primarily Day Use (2C) zoning within undeveloped areas adjacent to the river. Of the 193 acres within the riparian corridor boundary, 137 acres would be zoned 2C and 56 acres (29% of the total acreage within the riparian corridor boundary) would be zoned 3C.

Following are examples of how the management elements of Alternative 1 would affect native vegetation and vegetation-related biological ORVs in the El Portal segment. Those portions of El Portal zoned 3C (e.g., the Trailer Village, Old El Portal) would allow redevelopment as well as additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., fire suppression in the vicinity of structures), minor to moderate, adverse effects on native vegetation. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to

native vegetation (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain in 3C areas.

The zoning in El Portal would allow additional development of park administration facilities as well as other actions such as road repair, which could have short- and long-term, adverse effects on native vegetation. The intensity of these impacts could be reduced through the application of mitigation measures described in Appendix B. Although the Merced River Plan management elements as well as other park policies and federal laws would protect biological ORVs, other vegetation resources (e.g., upland scrub or woodlands) could be adversely affected (long term, moderate). Overall, the increase in park administrative use allowed under Alternative 1, combined with a lack of VERP systematic monitoring, could result in local, long-term, minor to moderate, adverse effects on vegetation resources and the biological ORVs in portions of the El Portal segment.

Impacts in Wawona. The area in the immediate vicinity of Wawona has experienced past development prior to the Merced River's designation in 1987. Existing park infrastructure and facilities in this area include the Wawona Road, the Wawona Wastewater Treatment Plant and maintenance complex, an underground water and sewer utility corridor, employee housing, community amenities, campgrounds, the Pioneer Yosemite History Center and the Wawona Hotel and Golf Course.

Although the South Fork of the Merced River in Wawona has a variety of zones, ranging from 1B (Wilderness) to 3C (Park Operations and Administration), the base zones are 1B, 2A, and 2B. The 1B, 2A, and 2B zones preclude new development such as interpretive centers, food services, campgrounds and lodging, and day-visitor parking. The Wawona Golf Course and Picnic Area (2C), Wawona Campground (3A), Wawona Hotel (3B), and Wawona maintenance facility (3C) are zoned to allow a range of more intensive use levels consistent with existing development and uses. The zoning and continued use of these sites is not expected to adversely affect local vegetation resources in the short or long term.

Facilities within the River Protection Overlay, such as portions of Wawona Campground and a portion of the Wawona maintenance facility, would be inconsistent with the River Protection Overlay and could be removed or relocated. Local, short-term, negligible to minor, adverse effects to vegetation could occur during removal of any facilities from the River Protection Overlay. These adverse impacts could be reduced to a negligible intensity by applying mitigation measures described in Appendix B. Such removal or relocation of facilities could increase opportunities for natural revegetation and restoration of riparian habitat, resulting in a long-term, minor, beneficial impact on streamside vegetation, a biological ORV for the Wawona segments.

Overall, the increase in park use under Alternative 1, combined with a lack of systematic monitoring or mechanisms by which to limit access or redirect visitor use in response to resource degradation, could result in local, long-term, minor, adverse effects on vegetation resources and the biological ORVs in the Wawona segments.

Summary of Alternative 1 Impacts. Compliance with existing park policies would help ensure that the biological ORVs related to vegetation are protected and enhanced. Under Alternative 1, continued application of management zoning and the River Protection Overlay, in combination with the continued application of the management elements adopted in the Merced River Plan, would allow many natural areas to remain relatively intact and would direct restoration and

enhancement of degraded native habitats. However, the estimated increase in park use over time would increase the intensity of visitor-related impacts for segments outside of Wilderness, where the existing quota system would continue to apply. This, combined with a lack of systematic monitoring or mechanisms by which to limit access or redirect visitor use in response to resource degradation, could result in local, long-term, minor to moderate, adverse effects on vegetation resources and the biological ORVs in some portions of the Merced River corridor.

Cumulative Impacts

Cumulative impacts to vegetation are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The projects identified below include those projects that have the potential to affect local vegetation patterns (i.e., within the river corridor) as well as large-scale or regional vegetation patterns.

Past Actions. In general, vegetation patterns of the Sierra Nevada are relatively intact compared to other areas of California. Regional vegetation has been historically affected by logging, fire suppression, rangeland clearing, grazing, mining, draining, damming, diversions, and the introduction of non-native species. Portions of the Merced River and South Fork corridors within Yosemite National Park are relatively natural, especially in wilderness areas where use has had little effect on vegetation. Development and use of infrastructure within Yosemite Valley and throughout the Sierra Nevada have caused local, long-term, adverse alterations to native vegetation patterns since the early days of Euro-American occupation in the 19th century.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint *South Fork and Merced Wild and Scenic River Implementation Plan* (1991b) for the segments of the South Fork and main stem of the Merced River that are under their jurisdiction. The plan is also a general management plan with many prescriptive goals and few specific actions. The plan endeavors to limit or end consumptive uses such as grazing within the river corridor and calls for the formalization of camping and launch facilities for nonmotorized watercraft. Implementation of these actions has had a beneficial effect by eliminating impacts where feasible (grazing does not currently occur within the river corridor), concentrating impacts in areas able to withstand visitor use, and providing facilities that mitigate adverse effects associated with visitor use (e.g., restrooms).

A number of recently implemented projects have begun to reverse the centuries-long pattern of native vegetation degradation caused by localized human uses in the region. These include:

- Merced River Ecological Restoration at Eagle Creek
- Happy Isles Fen Habitat Restoration

These projects are all anticipated to have local, long-term, moderate to major, beneficial effects on native vegetation because they involve the restoration of previously degraded areas and thus enhance local and regional native plant diversity. In addition to these specific projects, one of the major goals of the *Yosemite Valley Plan*, adopted by the National Park Service in December 2000, is to restore, protect, and enhance the natural resources of Yosemite Valley. Actions set forth in the plan that result in beneficial effects on vegetation include the removal of roads, facilities, and services in the Valley, as well as the relocation of employee housing out of the Valley and the establishment of vegetation restoration objectives (expressed as acres per habitat type).

Other past projects that have likely had a beneficial, cumulative effect on regional vegetation include transportation-related projects, which have the general goals of increasing transportation options and reducing reliance on automobiles in the area. In addition, the *Fire Management Plan* seeks to improve ecosystem health and meadows and therefore would have a regional, long-term, moderate to major, beneficial effect on Yosemite's vegetation resources and the biological ORVs throughout the Merced River corridor.

Present Actions. Present actions occurring in the region have the potential to result in both beneficial and adverse effects on vegetation resources, including:

- The Cook's Meadow Ecological Restoration is anticipated to have a local, long-term, moderate to major, beneficial effect on native vegetation because it involves the restoration of previously degraded areas and thus enhances local and regional native plant diversity.
- Additional current projects with net long-term, minor to moderate, beneficial effects on vegetation resources include the Happy Isles Dam Removal, Lower Yosemite Fall Project, Parkwide Invasive Plant Management Plan, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, and Yosemite Valley Shuttle Bus Procurement.
- Projects such as the Curry Village Employee Housing, Happy Isles to Vernal Fall Trail Reconstruction, and the Yosemite Motels Expansion could have short- and long-term, adverse effects on vegetation resources through construction-related, operational, and maintenance actions.
- The South Fork Bridge Replacement could have both adverse and beneficial effects on vegetation.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have both beneficial and adverse effects; and (3) projects anticipated to have a net adverse effect.

Examples of projects that could have a beneficial cumulative effect on regional vegetation include:

- Red Peak Pass Trail Rehabilitation
- Wawona Campground Rehabilitation
- Update to the *Yosemite Wilderness Management Plan*
- Visitor Use and Floodplain Restoration Program
- El Portal Old Wastewater Treatment Facility Removal

Reasonably foreseeable future actions that could have mixed adverse and beneficial effects on regional vegetation include:

- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Concept Plan
- Yosemite Lodge Area Redevelopment

Cumulative effects of these projects could be mixed, combining both adverse and beneficial effects. The net beneficial or adverse effects of these projects are difficult to predict. For example,

implementation of the El Portal Concept Plan could adversely affect vegetation resources during construction (short term) and permanently displace vegetation resources in El Portal due to construction of new employee housing (long term); however, removing and relocating employee housing and administrative facilities from Yosemite Valley to El Portal (long-term, beneficial effect) would reduce the intensity of these impacts and provide restoration opportunities in the Valley. Adverse impacts associated with the El Portal Concept Plan could be mitigated to a lesser intensity through project design (the design would need to protect and enhance the ORVs of the Merced River), implementation of Best Management Practices, compliance monitoring, and restoration.

Reasonably foreseeable future actions that could have local, adverse effects on vegetation include:

- El Portal Road Improvements Project (Segment D)
- Environmental Education Campus Development Program
- Indian Cultural Center
- Northside-Southside Drive Repaving
- Out-of-Valley Campground Plan
- Yosemite Village Interim Parking Improvements

Cumulative parkwide adverse effects would be primarily related to increased facilities and possible increases in visitor use and access. Each of these projects could have local, minor to major, adverse effects on vegetation resources during construction (short term) and through direct displacement of resources and effects of human use (long term). Examples of construction- and human-use-related effects on vegetation patterns include direct displacement of vegetation, introduction of non-native species that invade into adjacent natural areas and displace native species, fragmentation of habitats that prevents genetic mixing, alteration of natural patterns, and increased erosion and sedimentation.

Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on vegetation and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 1, could have a net local, long-term, negligible, beneficial effect on parkwide vegetation and the biological ORVs of the Merced River corridor.

Impairment

Alternative 1 would have a local, long-term, minor to moderate, adverse effect on parkwide vegetation as well as the biological ORVs of the Merced River corridor and therefore would not impair vegetation resources for future generations.

Wildlife

Analysis

Impacts to wildlife in the park can generally be classified into three main categories (Knight and Cole 1991): (1) habitat modification and fragmentation by disturbing vegetation and soil and changing microclimates (e.g., trampling habitat); (2) changing foraging or feeding ecology (e.g., discarding food or deliberately feeding animals); and (3) disturbance, whether intentional (harassment) or unintentional (e.g., wildlife observation, hiking across an animal's territory). Biological ORVs common to the entire Merced River (main stem and South Fork) include

riverine wildlife habitats, such as riparian forests, meadows, and the aquatic environment of the river.

The following discussion provides an overview of the types of impacts to wildlife resources that could occur within each segment of the Merced River corridor from application of management elements of the Merced River Plan (e.g., boundaries, classifications, ORVs, management zones, the River Protection Overlay, and the Section 7 determination process) and other user capacity programs. In the short term under Alternative 1, overall visitor numbers are expected to remain relatively similar to existing levels. In the long term, however, overall visitor numbers would likely increase with the projected increase in visitor demand, resulting in adverse effects to wildlife and the biological ORVs. Visitation increases would not affect the vast majority of the Wild segments of the river because the Wilderness Trailhead Quota System would remain in place.

Impacts in Wilderness. Wildlife habitats within the upper Merced River are generally intact. Meadows within the Wilderness segments of the Merced River occur at Merced and Washburn Lakes, Echo Valley, at isolated locations along the Merced River, and at small alpine lakes. Coniferous forest habitats along the upper Merced River are structurally diverse and support a full community of associated wildlife species, except in the vicinity of campsites or other visitor areas, which occur in a very small percentage of the river corridor. Wilderness segments of the South Fork include a nearly full range of riverine environments typical to the Sierra Nevada that are largely intact and undisturbed by humans. Biological ORVs of the Wilderness segments include riverine wildlife habitats such as riparian forests, meadows, and the aquatic environment of the river.

Under Alternative 1, continued implementation of the park's existing user capacity management program could have short-term, negligible, beneficial impacts on wildlife and the biological ORVs in wilderness areas of the upper Merced River by reducing visitor effects on these sensitive resources. For example, trailhead quotas limit overnight entries into wilderness areas of the park. Existing trailhead quotas based on resource protection goals also restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows and impacts to associated wildlife species. Visitor numbers are expected to increase, but trailhead quotas would ensure no increase in overnight wilderness use. However, Alternative 1 provides a means for monitoring adverse effects on wildlife resources and the biological ORVs through WIMS, which implements management actions (e.g., restoring campsites and trails, limiting wilderness permits, or closing trails) to reduce visitor-use impacts on these resources.

Under Alternative 1, wilderness areas would maintain wilderness zoning (1A, 1B, 1C, and 1D) and would continue to reflect current management practices, based on the Wilderness Act and federal and Yosemite National Park wilderness policies and guidelines. Management zoning and the River Protection Overlay severely limit the types of facilities that could be built or rebuilt (e.g., large campsites with facilities are prohibited in zone 1B). All future actions (e.g., trail rehabilitation) would be subject to the consistent set of criteria and considerations (including the Section 7 determination process) from the Merced River Plan, which would guide how the actions could be implemented. Therefore, the application of management zoning and other Merced River Plan elements would have a local, short- and long-term, negligible, beneficial effect on wildlife and the biological ORVs in the Wilderness segments.

Under Alternative 1, impacts to wildlife and the biological ORVs would be concentrated in the few wilderness areas of high visitor use (e.g., Little Yosemite Valley Backpackers Campground and along major trail routes). The majority of the Wilderness segments of the planning corridor are intact and not affected by visitor use.

In addition, Alternative 1 includes a monitoring system to provide feedback on resource conditions. Management actions to reduce trailhead use in areas where visitor use is adversely affecting wildlife resources and the biological ORVs. Overall, the use of management zoning and other Merced River Plan elements, together with the trailhead quota and monitoring system, would protect and enhance native wildlife and the biological ORVs in Wilderness segments.

Impacts in Yosemite Valley. Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for river-related species, neotropical migrant songbirds, and bat species. These habitats and associated species are examples of biological ORVs in Yosemite Valley.

Under Alternative 1, the Merced River Plan's management zoning, River Protection Overlay and other elements would further the protection of native wildlife. The existing pattern of development in Yosemite Valley was established long before the river's designation as Wild and Scenic. Although portions of the east Valley would remain developed and subject to facility and visitor-use effects, the existing Restricted Access Plan would continue to be implemented when visitor levels exceed the capacity of the park transportation infrastructure. Park management could also close areas that show unacceptable impacts to allow for restoration of wildlife habitat or to reduce the intensity of the adverse effects. Current zoning and the River Protection Overlay preclude several types of new development (e.g., new campsites are not allowed in the Day Use zone at Cathedral Beach) that could otherwise adversely affect native wildlife. All future actions (e.g., bridge removal, construction of new campsites) would be subject to the Merced River Plan's set of criteria and considerations which require the protection of ORVs. The application of existing facility-based user capacity management tools, management zoning, and the Merced River Plan's criteria and considerations would have a local, long-term, minor, beneficial effect on native wildlife and the biological ORVs.

In the long term, visitor numbers are expected to increase, resulting in local, minor to moderate, adverse effects on wildlife resources (e.g., habitat disturbance due to trampling, erosion, and social trails; human disturbance to wildlife; and human/wildlife conflicts). This effect is expected to be minor in areas of lower visitor use such as the west Valley. However, this effect is expected to be moderate in areas of high day-visitor use such as the east Valley, and specifically the Yosemite Lodge area. Although Alternative 1 provides measures to reduce user capacity (e.g., restricting access to the east Valley and area closures), this alternative does not provide a systematic VERP program to assess the effects of visitor use on wildlife resources and the biological ORVs.

This alternative would not substantially affect wildlife resources in areas of the Valley with low visitor use. However, local, short- and long-term, adverse effects to native wildlife would continue to occur in areas of intense visitor use as a result of Alternative 1 and the lack of a VERP monitoring and management program to prevent increased visitor-use effects. Overall, Alternative 1 would result in a net local, long-term, minor to moderate, adverse effect.

Impacts in the Gorge. Montane hardwood conifer is the dominant habitat type adjacent to riparian areas below Yosemite Valley. This type is broadly transitional between upper-elevation forest types and chaparral and is thus the most important type for migratory wildlife and their associated predators. Biological ORVs of the Gorge segment include river-associated wildlife species and diverse riparian areas that are largely undisturbed by humans.

The majority of the Gorge segment is zoned 2A+, 2B, 2C, and 2D. With the exception of the Cascades area, the Gorge segment would continue to be relatively inaccessible and visitor use is unlikely to increase substantially. Gorge zoning precludes most types of new development (e.g., campgrounds and lodging, new roads) that have the potential to adversely affect wildlife. In addition, future actions that could occur under the current zoning would be subject to the Merced River Plan's consistent set of criteria and considerations which require the protection of ORVs, as well as existing park management policies, which guide how the actions could be implemented.

In the Cascades area and the few other accessible areas of the gorge segment, visitor numbers under Alternative 1 are expected to increase, resulting in moderate, adverse effects on wildlife in these areas. Increased use of El Portal Road by visitors traveling to the Valley could also affect wildlife in the Gorge segment through noise, traffic, and other human disturbance. Alternative 1 does not provide a systematic VERP program to assess the effects of visitor use on wildlife resources and the biological ORVs.

Overall, the application of zoning and the Merced River Plan's consistent set of criteria and considerations within the Gorge segment in combination with the lack of a monitoring program to prevent increased visitor-use effects would have a local, long-term, minor, adverse effect on native wildlife and the biological ORVs in accessible portions of the Gorge segment.

Impacts in El Portal. Montane hardwood conifer is the dominant habitat type adjacent to riparian areas below Yosemite Valley. This type is broadly transitional between upper-elevation forest types and chaparral and is thus the most important type for migratory wildlife and their associated predators. In El Portal, wildlife access among habitats has been affected for many decades on the north side of the river by roads, residences, lodging, and other human activities and development. In contrast, habitats on the south side of the river are relatively pristine and free of human-built barriers, although some historic mining operations occurred in this area. The quality of these north-facing habitats is recognized as an ORV in the El Portal area. El Portal has a base zone of 2C, with large tracts zoned 3C. The El Portal segment of the river corridor includes the 100-year floodplain or River Protection Overlay, whichever is greater, as adopted in the Merced River Plan.

Examples of how management zoning, the River Protection Overlay, and the criteria and considerations under the Merced River Plan would affect native wildlife and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Under its 2C zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species. Additional portions of the El Portal corridor are zoned 2C, preventing intensive development in areas adjacent to the river that support sensitive wildlife habitats. The 2C zoning of the

Sand Pit and other 2C areas could result in a local, moderate, beneficial effect on the biologic ORV.

- Portions of the El Portal corridor are zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development or redevelopment (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on native wildlife. Although the application of mitigation measures described in Appendix B, would reduce impacts, long-term, minor to moderate, adverse effects on native wildlife (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain in these areas.

The application of management zoning, the River Protection Overlay, and the criteria and considerations under the Merced River Plan would help to protect and enhance wildlife and the biological ORVs in the river corridor in El Portal. The zoning in El Portal allows for road repair as well as additional development of park administration facilities, which could have short- and long-term, adverse effects on native wildlife. The management elements and criteria and considerations (including the Section 7 determination process) would help protect the biological ORVs both within and outside the boundary.

In the long term, visitor numbers may increase in close proximity to the river, resulting in minor, adverse effects on wildlife resources in areas of moderate day-visitor use such as El Portal. Alternative 1 does not provide a systematic monitoring program with indicators of adverse user capacity effects on wildlife resources and the biological ORVs.

Although Alternative 1 includes the use of existing user capacity management tools, management zoning, and the criteria and considerations of the Merced River Plan, the existing narrow boundary and the lack of the VERP program would result in local, long-term, minor to moderate, adverse effects on native wildlife and the biological ORVs in the accessible and developed portions of El Portal segment.

Impacts in Wawona. Habitats along the South Fork—meadow, riparian, scrub and chaparral, and coniferous and deciduous forests—comprise nearly a full range of wildlife habitats that are intact and undisturbed by humans. The meadow and wetland communities of Wawona are currently designated as biological ORVs.

The Wawona segments include limited developed areas such as the Wawona Golf Course and Wawona Picnic Area (zoned 2C), Wawona Campground (zoned 3A), Wawona Hotel (zoned 3B), and the Wawona maintenance facility (zoned 3C). These areas were developed long before the river's designation as Wild and Scenic. Adverse effects to wildlife associated with developed areas include habitat fragmentation due to buildings, roads, and other development, vehicle and pedestrian noise, human presence, increased human/wildlife conflicts, and other visitor-use effects. These adverse effects are ongoing, local, and minor to moderate. However, the base zones within the South Fork in Wawona (1A, 2A, and 2B) preclude new development such as interpretive centers, food services, campgrounds and lodging, and day-visitor parking. Overall, this zoning results in a long-term, negligible, beneficial impact to wildlife and the biological ORVs.

Facilities within the River Protection Overlay, such as portions of Wawona Campground and a portion of the Wawona maintenance facility, are inconsistent with the River Protection Overlay and could be removed or relocated. Such removal or relocation of facilities could increase

opportunities for natural revegetation and restoration of riparian habitat, resulting in a local, long-term, minor, beneficial impact on streamside vegetation, a biological ORV. Local, short-term, negligible to minor, adverse effects to wildlife could occur during any removal of facilities from the River Protection Overlay. These adverse impacts would be reduced to a negligible intensity by application of mitigation measures described in Appendix B. Limits on facilities through management zoning and the River Protection Overlay in combination with the Merced River Plan's criteria and considerations would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats.

In the long-term, visitor numbers are expected to increase, resulting in moderate, adverse effects on wildlife resources in the limited areas experiencing high visitor use in the Wawona segments. Alternative 1 does not provide a systematic VERP program to monitor the effects of visitor use on wildlife resources and the biological ORVs.

Overall, to the increase in park use under Alternative 1 and the lack of a VERP program to assess the effects of visitor-use would have a local, long-term, minor to moderate, adverse impact on native wildlife and the biological ORVs in those parts of the Wawona segments most used by visitors.

Summary of Alternative 1 Impacts. Compliance with existing park policies would help ensure that the biological ORVs related to wildlife are protected and enhanced. Under Alternative 1, management zoning and the River Protection Overlay would continue to preclude various types of new development that have the potential to affect native wildlife (a minor, beneficial impact). In the long term, the combination of existing facility-based user capacity management tools, management zoning, the River Protection Overlay, and application of a consistent set of decision-making criteria and considerations (including the Section 7 determination process) would have a negligible, beneficial effect on wildlife and the biological ORVs within the river corridor. These elements would preclude inappropriate development, encourage the removal of inappropriate facilities from the immediate river corridor, subject new actions to a rigorous planning process designed to eliminate adverse effects on the ORVs, and manage zones to their desired conditions. This would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats.

Local, short- and long-term, adverse effects on native wildlife could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new campsites, parking facilities, road repair).

However, because Alternative 1 does not include a systematic monitoring program in non-Wilderness segments to prevent increased visitor-use effects on wildlife resources and the biological ORVs, this alternative could result in adverse effects on wildlife resources. Under Alternative 1, four basic adverse impacts would continue to occur and are expected to worsen over time in localized areas of moderate and high visitor use in the non-Wilderness segments of the corridor: degradation in habitat quality for riparian and wet-meadow-dependent wildlife; loss of habitat connectivity and increased habitat fragmentation; increased human-related disturbance; and continued stress on wildlife through factors such as the increasing presence of non-native species and disturbance-tolerant wildlife.

Overall, Alternative 1 would result in a local, long-term, minor to moderate, adverse impact on native wildlife and the biological ORVs within the river corridor.

Cumulative Impacts

Cumulative effects to wildlife are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The impact intensity would depend on whether the effects are expected to interact cumulatively. The projects identified below include those projects that have the potential to affect local wildlife patterns (i.e., within the river corridor) as well as large-scale or regional wildlife patterns.

Past Actions. Wildlife communities have been manipulated almost since the establishment of the park. Regional wildlife has been historically affected by logging, fire suppression, rangeland clearing, grazing, mining, draining, damming, diversions, and the introduction of non-native species. Fur-bearing mammals were trapped by park rangers until 1925; lions were considered dangerous predators and controlled through the 1920s; bears were artificially fed as a tourist attraction until 1940. Natural wildfires, with their generally beneficial effects on wildlife habitat, were routinely suppressed until 1972 (Wuerthner 1994). Past and ongoing activities include recreational use as well as the construction of dams, diversion walls, bridges, roads, pipelines, riprap, buildings, campgrounds, and other recreational features.

Yosemite's largest mammal, the grizzly bear, was extirpated from the region and from the state in the 1920s. Other mammal species that survive but are extremely rare are the fisher, wolverine (possibly extinct), and Sierra Nevada red fox. Several bird species have probably been reduced in Yosemite Valley by human activity, but are present in less disturbed areas of the park. Willow flycatchers no longer nest in Yosemite Valley—probably due as much to parasitism by brown-headed cowbirds as to destruction of riparian and meadow habitat. On a wider scale, apparent population declines have been detected in numerous other bird species in the Sierra Nevada, including Yosemite National Park. Possible causes for these declines include grazing, logging, fire suppression, development, recreational use, pesticides, habitat destruction on wintering grounds, and large-scale climate changes.

Amphibians in Yosemite National Park have suffered population declines similar to those seen in the rest of the Sierra Nevada (Drost and Fellers 1996). Red-legged frogs likely were found in Yosemite Valley in the past but are now are presumed extirpated. Significant factors in their disappearance probably include a reduction in perennial ponds and wetlands, and predation by bullfrogs. At higher elevations, mountain yellow-legged frogs and Yosemite toads are still present in a number of areas, but are severely reduced in population and range. Foothill yellow-legged frogs have disappeared completely from the park, if not the entire Sierra Nevada. Research continues to identify the causes of amphibian declines in the Sierra Nevada; possible causes include habitat destruction, non-native fish, pesticides, and diseases. Most fish currently found in the Merced River and its tributaries in Yosemite National Park have been introduced. Prior to trout stocking for sport fishing, native fish in Yosemite were probably limited to the rainbow trout and the Sacramento sucker, both of which were present only in the lower portions of the Merced River (i.e., Yosemite Valley and below). Rainbow trout introduced through stocking from other waters and fish hatcheries have now hybridized with, and/or has displaced, the original strain.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint *South Fork and Merced Wild and Scenic River Implementation Plan* for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is also a general management plan with many prescriptive goals and few actions. The plan endeavors to limit or end consumptive uses such as grazing within the river corridor and calls for the formalization of camping and launch facilities for nonmotorized watercraft. Implementation of these actions has a

beneficial effect by eliminating impacts where feasible (grazing does not currently occur within the river corridor), concentrating impacts in areas able to withstand visitor use, and providing facilities that mitigate adverse effects associated with visitor use (e.g., restrooms).

Recently implemented projects have begun to reverse the centuries-long pattern of native vegetation and wildlife habitat degradation due to localized human uses in the region. These include:

- Merced River Ecological Restoration at Eagle Creek
- Happy Isles Fen Habitat Restoration
- Cascades Diversion Dam Removal

These projects are expected to have local, long-term, moderate to major, beneficial effects on wildlife habitat because they involve the restoration of previously degraded areas and thus enhance local and regional wildlife diversity. In addition to these specific projects, one of the major goals of the *Yosemite Valley Plan* is to restore, protect, and enhance the natural resources of Yosemite Valley. Actions set forth in the plan that result in beneficial effects on wildlife include the removal of roads, facilities, and services in the Valley (including roads through Stoneman Meadow and the southern portion of Ahwahnee Meadow, most parking areas in the east Valley, and commercial trail rides in the Valley), as well as the relocation of employee housing out of the Valley and the establishment of vegetation restoration objectives (expressed as acres per habitat type). Another broader plan, the *Fire Management Plan*, seeks to improve ecosystem health and restore meadows and therefore would have a regional, long-term, moderate to major, beneficial effect on Yosemite's wetland resources and the biological ORVs throughout the Merced River corridor.

Present Actions. Present actions in the region have the potential to result in both beneficial and adverse effects on wildlife resources:

- Current projects with net long-term, beneficial effects on wildlife resources (resulting from revegetation and habitat restoration efforts, control of competing invasive species, and improved air quality) include the Cook's Meadow Ecological Restoration, Happy Isles Dam Removal, Lower Yosemite Fall Project, Parkwide Invasive Plant Management Plan, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, and Yosemite Valley Shuttle Bus Procurement.
- Projects such as the Curry Village Employee Housing, Happy Isles to Vernal Fall Trail Reconstruction, and Yosemite Motels Expansion could have short- and long-term, adverse effects on wildlife resources through construction-related, operational, and maintenance actions.
- The South Fork Bridge Replacement could have mixed adverse and beneficial effects on wildlife resources.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have both beneficial and adverse effects; and (3) projects anticipated to have a net adverse effect.

Examples of projects that could have a cumulative, beneficial effect on wildlife resources include:

- Wawona Campground Rehabilitation

- Update to the *Yosemite Wilderness Management Plan*
- Red Peak Pass Trail Rehabilitation
- Visitor Use and Floodplain Restoration Program

Although each of these projects could have slight local, short-term, adverse effects (e.g., construction-related effects), the general goal of these projects is to increase coordinated resource management and to restore sensitive ecosystems. Therefore, these projects could have a long-term, beneficial cumulative impact to regional native wildlife. For example, the update to the *Yosemite Wilderness Management Plan* could result in additional restrictions on wilderness facilities and activities, reducing site-specific erosion and trampling and possibly stock use.

Reasonably foreseeable future actions that could have mixed adverse and beneficial effects on wildlife resources include:

- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Concept Plan
- Yosemite Lodge Area Redevelopment

Cumulative effects of these projects could be mixed, combining both adverse and beneficial effects. The net beneficial or adverse effects of these projects are difficult to predict. For example, implementation of the Yosemite Lodge Area Redevelopment project has the potential to adversely affect wildlife resources during construction (short term), as well as permanently displace wildlife and remove wildlife habitat with the relocation of Northside Drive (long term); however, removing Yosemite Lodge facilities from the River Protection Overlay and floodplain would allow for revegetation and restoration of wildlife habitat within the Merced River corridor (long-term, beneficial effect). Adverse impacts associated with construction activities could be partially mitigated through project design and implementation of Best Management Practices, compliance monitoring, and restoration.

Reasonably foreseeable future actions that could have an adverse effect on wildlife resources include:

- El Portal Road Improvements Project (Segment D)
- Environmental Education Campus Development Program
- Indian Cultural Center
- Northside-Southside Drive Repaving
- Out-of-Valley Campground Plan
- Yosemite Village Interim Parking Improvements

Cumulative parkwide adverse effects would be related to increased facilities, access, and regional population growth. Each of these projects could have local, minor to major, adverse effects on wildlife resources during construction (short term) and due to direct displacement of resources (long term). Construction- and human-use-related effects on wildlife resources include those resulting from heavy equipment and construction/demolition activities (e.g., soil compaction, dust, vegetation removal, noise, and the introduction and spread of non-native species), night

lighting, human presence, human/wildlife conflicts, fire suppression in the vicinity of structures. These actions could result in direct losses of nests or burrows, and indirect effects through the disturbance of nesting birds.

Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wildlife and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 1, could have a net local, long-term, minor, adverse effect on parkwide native wildlife and the biological ORVs of the Merced River corridor.

Impairment

Alternative 1 would have a local, long-term, minor to moderate, adverse effect on parkwide native wildlife as well as the biological ORVs of the Merced River corridor and therefore has the potential to impair wildlife resources for future generations.

Rare, Threatened, and Endangered Species

Analysis

Due to the programmatic and prescriptive nature of the Merced River Plan, it is not possible to quantify discrete impacts to individual species. The conclusions herein provide programmatic information about rare, threatened, or endangered (sometimes referred to as "special-status") plants and animals.

Species present in low numbers or that are of limited distribution are the most sensitive to impacts. Species that are less rare but more vulnerable to the types of actions that might take place (as a result of management decisions under the Merced River Plan) serve as important measures of adverse impacts to park ecosystems. Species that are members of both groups are considered to be vulnerable at a programmatic level (i.e., as a result of even broad management decisions implicit in this Revised Merced River Plan) and are discussed below as examples of possible effects.

River-related rare, threatened, and endangered species are components of the biological ORV. Therefore, the magnitude of any adverse or beneficial effect to river-related special-status species has been evaluated for the corresponding effect on the biological ORV. The following discussion provides an overview of the types of impacts to special-status species that could occur within each segment of the Merced River corridor from application of Merced River Plan management elements (e.g., boundaries, classifications, ORVs, management zones, the River Protection Overlay, and the Section 7 determination process for the Merced River corridor) and existing user capacity measures. In the short term under Alternative 1, visitor numbers are expected to remain similar to existing levels. In the long term, however, visitor numbers would likely increase, resulting in adverse effects to special-status species and the biological ORVs.

Impacts in Wilderness. Habitats within the upper Merced River are generally intact, except in the few areas where visitor use is intense (e.g., in the vicinity of the Little Yosemite Valley Backpackers Campground, Moraine Dome Backpackers Campground, Merced Lake High Sierra Camp, and Backpackers Campground, and along major trail routes). All of these facilities pre-date the river's designation as Wild and Scenic. The Wilderness segment of the South Fork includes a nearly full range of riverine environments typical to the Sierra Nevada that are largely intact and undisturbed by humans. No facilities (other than a few trails) occur in the upper and lower

portions of the South Fork, access is difficult, and visitor and stock use is low. Rare, threatened, and endangered species of plants and wildlife reported in the South Fork generally occur in wilderness portions of the corridor or in relatively inaccessible habitats. Biological ORVs of the Wilderness segments of the Merced River include riverine habitats such as riparian forests, meadows, and the aquatic environment of the river, and associated special-status species such as Yosemite toad and mountain yellow-legged frog.

The following examples describe general actions and related adverse effects of visitor use that would continue to occur in the vicinity of facilities and areas of concentrated use in the upper main stem of the Merced River. These effects are generally considered long term and adverse. In areas of the wilderness reaches of the South Fork of the Merced River, continued use of existing facilities (e.g., trails) at a similar level of intensity would not adversely affect rare, threatened, and endangered species.

- Trampling, grazing, or camping within meadows could have direct effects on rare plants, such as the Mono Hot Springs evening primrose, and habitat for ground dwelling special-status wildlife species, including Sierra Nevada mountain beaver.
- Trampling and grazing of meadows could reduce habitat for voles, therefore reducing the prey base for great gray owls.
- Stock use would continue to support the local abundance of brown-headed cowbirds (a nest parasite) to the detriment of species such as willow flycatcher and yellow warblers.
- Continued rock climbing could adversely affect crevice-roosting special-status species of bats, such as greater western mastiff bat.
- Continued concentrated visitor use along the north side of the Merced River within Little Yosemite Valley could have site-specific, adverse effects on forest communities located north of the river and could have long-term, adverse effects on habitat for northern goshawk and Cooper's hawk at this location, as repeated disturbances near nest trees could result in nest failure or abandonment.

The degree to which rare, threatened, and endangered species would be affected depends on individual species habitat requirements, position relative to facilities and use, and sensitivity to perturbation. Special-status species that occur near Merced Lake High Sierra Camp and Backpackers Campground, Little Yosemite Valley Backpackers Campground, Moraine Dome Backpackers Campground, and major trail routes could experience adverse effects.

Under Alternative 1, implementation of the park's existing user capacity management program could have short-term, negligible, beneficial impacts on rare, threatened, and endangered species and the biological ORVs in Wilderness segments of the Merced River by reducing visitor effects on these sensitive resources. For example, trailhead quotas limit total overnight entries into wilderness areas of the park to 1,280 per day. Existing quotas based on resource protection goals also restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows and impacts to associated rare, threatened, and endangered species. However, visitor numbers are expected to increase, and Alternative 1 does not provide a means for monitoring adverse effects on special-status species and the biological ORVs or for implementing management actions (e.g., reducing trailhead quotas, limiting wilderness permits, or closing trails) to reduce adverse visitor-use impacts on these resources.

Under Alternative 1, wilderness areas would maintain wilderness zoning (1A, 1B, 1C, and 1D) and would continue to reflect current management practices and visitor use levels, based on the Wilderness Act, the Wilderness trailhead quota system, and the Merced River Plan. Management zoning and the River Protection Overlay limit the types of new facilities that could be built (e.g., large campsites with facilities are prohibited in zone 1B zone) potentially beneficially affecting special-status species. Future actions (e.g., trail rehabilitation) that could occur under the current zoning would be subject to the Merced River Plan's consistent set of criteria and considerations which require the protection of ORVs. The plans and policies would result in local, short- and long-term, negligible, beneficial effects on special-status species and the biological ORVs in the Wilderness segments.

A Wilderness Impacts Monitoring System (WIMS) began in the 1970s. Under WIMS, the park conducts wilderness-wide inventory and monitoring studies focused on campsite and trail impacts. The results of WIMS provides park management with a mechanism to monitor potential impacts to the river corridor through wilderness, and take corrective actions as appropriate to ensure that the river's ORVs are being protected and enhanced in these segments.

Overall, the application of management zoning and the other Merced River Plan elements, in combination with the trailhead quota system and WIMS would have a negligible effect on special-status species and the biological ORVs in the Wilderness segments.

Impacts in Yosemite Valley. Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for river-related species, including special-status species, neotropical migrant songbirds, and bat species. These habitats and associated species are examples of biological ORVs in Yosemite Valley. Existing facilities and ongoing stock and visitor use would result in the contribution of adverse affects on these habitats and rare, threatened, and endangered species in the following ways:

- Trampling of meadows (e.g., at the base of El Capitan) could have direct effects on rare plants, as well as habitat for ground-dwelling wildlife species (e.g., voles), therefore reducing the prey base for special-status raptors and owls.
- Continued high visitor use and the presence of the stable in Yosemite Valley would promote brown-headed cowbirds to the detriment of species such as yellow warbler.
- Riparian-dependent species (e.g., yellow warbler) would continue to be adversely affected by the overall amount of noise, traffic, and human presence at facilities such as North and Lower Pines Campgrounds and Camp 6.
- Continued expansion of coniferous forests throughout Yosemite Valley could adversely affect wildlife species such as great-horned owl and yellow warbler and plant species such as sugar stick, boreal bedstraw, false pimpernel, azure penstemon, and ladies' tresses that depend on meadow and oak woodland habitats.
- Introduced trout would continue to affect native rainbow trout strains. Bullfrogs would continue to affect special-status amphibians and could affect reintroduction efforts (e.g., for California red-legged frog).
- Continued non-native predation, fragmentation of aquatic and floodplain habitats, use of nonmotorized watercraft, swimming, and fishing could adversely affect northwestern pond turtle.

- Increased human presence and human-related effects associated with the use of facilities (e.g., night lighting, reduction of habitat, noise, erosion) would likely result in long-term, adverse effects on special-status bats, hawks, owls, and numerous other bird species in Yosemite Valley.
- Alternative 1 could affect the success of reintroduction or recolonization efforts for such species as willow flycatcher and California red-legged frog, now extirpated from Yosemite Valley.

Under Alternative 1, Merced River Plan's management zoning, River Protection Overlay and other elements would further the protection of sensitive species. The existing pattern of development in Yosemite Valley was established long before the river's designation of Wild and Scenic. Although portions of the east Valley would remain developed and subject to facility and visitor-use effects, the existing Restricted Access Plan would continue to be implemented when visitor levels exceed the capacity of the park transportation infrastructure. Park management could also close areas that show unacceptable impacts to allow for restoration or to reduce the intensity of the adverse effects. In addition, current zoning and the River Protection Overlay preclude several types of new development (e.g., new campsites are not allowed in the Day Use zone at Cathedral Beach) that have the potential to adversely affect rare, threatened, and endangered species. Future actions that could occur under current zoning (e.g., bridge removal, construction of new campsites) would be subject to the Merced River Plan's consistent set of criteria and considerations which include the protection of ORVs. The application of existing facility-based user capacity management tools, management zoning, and the Merced River Plan's criteria and considerations in Yosemite Valley would have a local, long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

In the long term, visitor numbers are expected to increase, resulting in adverse effects on special-status species (e.g., night lighting, reduction of habitat, noise, erosion). These effects are expected to be moderate in areas of high visitor use such as east Yosemite Valley and minor in lower use areas such as the western portion of Yosemite Valley. Alternative 1 does not provide a means for monitoring adverse effects on special-status species and the biological ORVs or for implementing management actions to reduce visitor-use impacts on these resources.

Although Alternative 1 does include some mechanisms for protecting special-status species and the biological ORVs in Yosemite Valley, local, short- and long-term, adverse effects to special-status species could occur as the result of increases in visitation and the lack of a monitoring and management program to prevent increased visitor-use effects. These local, long-term, adverse effects would be minor to moderate.

Impacts in the Gorge. ORVs of the Gorge segment include river-associated special-status species and diverse riparian areas that are largely undisturbed by humans. The majority of the Gorge segment is zoned 2A+, 2A, 2B, and 2D. With the exception of the Cascades area, the Gorge segment would continue to be relatively inaccessible, and visitor use is unlikely to increase. Gorge zoning precludes most types of new development (e.g., campgrounds and lodging, new roads) that have the potential to adversely affect rare, threatened, and endangered species. In addition, future actions that could occur under the current zoning would be subject to the Merced River Plan's consistent set of criteria and considerations, which require the protection of ORVs. Other existing user capacity policies and guidelines would also be used.

In the long term, visitor numbers under Alternative 1 are expected to increase, resulting in moderate, adverse effects on special-status species in areas of moderate visitor use such as the Cascades area. Alternative 1 does not provide a means for monitoring adverse effects on special-status species and the biological ORVs or for implementing follow-on management actions to reduce visitor-use impacts on these resources.

Overall, the application of zoning and the Merced River Plan's consistent set of criteria and considerations within the Gorge segment in combination with the lack of a monitoring and management program to prevent increased visitor-use effects would have a local, long-term, minor, adverse effect on special-status species and the biological ORVs in accessible portions of the Gorge segment.

Impacts in El Portal. Montane hardwood conifer is the dominant habitat type adjacent to riparian areas below Yosemite Valley. In El Portal, wildlife access among habitats has been affected for decades on the north side of the river by roads, residences, lodging, and other human activities and development. In contrast, habitats on the south side of the river are relatively pristine and free of human-built barriers, although some historic mining operations have occurred in this area. The quality of these north-facing habitats is recognized as an ORV in the El Portal area, potentially providing nesting/roosting and foraging habitat for numerous special-status bird and bat species. El Portal has a base zone of 2C, with large tracts zoned 3C. The El Portal segment of the river corridor boundary includes the 100-year floodplain or River Protection Overlay, whichever is greater, as adopted in the Merced River Plan.

Examples of how management zoning, the River Protection Overlay, and the criteria and considerations under the Merced River Plan would affect rare, threatened, and endangered species and the biological ORVs in El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Riparian vegetation, such as the host plant for the Valley elderberry longhorn beetle, as well as a recently identified population of Congdon's wooly sunflower exist at this site. Under its 2C zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, moderate, beneficial effect on this ORV.
- Portions of El Portal are zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on rare, threatened, and endangered species. Although the application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects on rare, threatened, and endangered species (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain in these areas.

The application of management zoning, the River Protection Overlay, and the criteria and considerations under the Merced River Plan would help to protect and enhance rare, threatened, and endangered species and the biological ORVs in El Portal. The zoning in El Portal allows for road repair as well as additional development of park administration facilities, which could have short- and long-term, adverse effects on rare, threatened, and endangered species. The management elements and criteria and considerations (including the Section 7 determination

process) would protect rare, threatened, and endangered species and the biological ORVs both within and outside the boundary.

In the long term, visitor numbers are expected to increase, resulting in minor to moderate, adverse effects on special-status species in areas of moderate day-visitor use such as in close proximity to the river. Alternative 1 does not provide a means for monitoring adverse effects on special-status species and the biological ORVs or for implementing management actions to reduce visitor-use impacts on these resources.

Although Alternative 1 includes the use of existing user capacity management tools, management zoning, and the consistent set of Merced River Plan criteria and considerations, the lack of a VERP monitoring and management program to prevent increased visitor-use effects would have a local, short- and long-term, minor to moderate, adverse effect on rare, threatened, and endangered species and the biological ORVs in accessible and developed portions of this segment.

Impacts in Wawona. Habitats along the South Fork—meadow, riparian, scrub and chaparral, and coniferous and deciduous forests—comprise nearly a full range of habitats that are intact and undisturbed by humans. The meadow and wetland communities of Wawona and the fishery along the South Fork are currently designated as biological ORVs. River-related special-status species in the Wawona segments include Wawona riffle beetle and willow flycatcher, a species indicative of an intact meadow-riparian complex.

The Wawona segments include developed areas such as the Wawona Golf Course and Wawona Picnic Area (2C), Wawona Campground (3A), Wawona Hotel (3B), and the Wawona maintenance facility (3C). These areas were developed well before the river was designated Wild and Scenic. Adverse effects to rare, threatened, and endangered species associated with developed areas include habitat fragmentation due to buildings, roads, and other development, trampling, social trails, vehicle and pedestrian noise, human presence and disturbance, and other visitor-use effects. These adverse effects are local, long term, and minor to moderate. However, the base zones within the South Fork in Wawona (1B, 2A, and 2B) preclude new development such as interpretive centers, food services, campgrounds and lodging, and day-visitor parking. This zoning results in a long-term, negligible, beneficial impact to rare, threatened, and endangered species and the biological ORVs.

Facilities within the River Protection Overlay, such as portions of Wawona Campground and a portion of the Wawona maintenance facility, are inconsistent with the River Protection Overlay and could be removed or relocated. This could increase opportunities for natural revegetation and restoration of riparian habitat, resulting in a local, long-term, minor, beneficial impact on streamside vegetation and special-status species. Local, short-term, negligible to minor, adverse effects to special-status species could occur during removal of any facilities from the River Protection Overlay. These adverse impacts would be reduced to a negligible intensity by application of mitigation measures described in Appendix B. Limits on facilities (management zoning and the River Protection Overlay) in combination with the application of a consistent set of decision-making criteria and considerations from the Merced River Plan would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats.

In the long term, visitor numbers are expected to increase, resulting in moderate, adverse effects on special-status species in the limited areas of high day-visitor use in Wawona. Alternative 1 does not include a VERP program for monitoring adverse effects on special-status species and the biological ORVs or for implementing follow-on management actions.

Overall, to the increase in park use under Alternative 1 and the lack of a VERP monitoring and management program to assess the effects of visitor use would have a local, long-term, minor to moderate, adverse impact on rare, threatened, and endangered species and the biological ORVs in those parts of Wawona most used by visitors.

Summary of Alternative 1 Impacts. Compliance with existing park policies and federal regulations such as the Endangered Species Act help ensure that the biological ORVs in each river segment are protected and enhanced. Under Alternative 1, management zoning and the River Protection Overlay would preclude various types of new development that have the potential to affect rare, threatened, and endangered species. In the long term, the combination of existing facility-based user capacity management tools, management zoning, the River Protection Overlay, and application of a consistent set of decision-making criteria and considerations from the Merced River Plan would have a negligible, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the river corridor. These elements could preclude inappropriate development, remove inappropriate facilities from the immediate river corridor, subject new actions to a rigorous planning process designed to eliminate adverse effects on the ORVs, and manage zones to their desired conditions. This would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats.

Local, short- and long-term, adverse effects on special-status species could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new campsites, parking facilities, road repair). In addition, because Alternative 1 does not include a VERP monitoring and management program to prevent increased visitor-use effects on special-status species and the biological ORVs, this alternative could result in adverse effects on rare, threatened, and endangered species. Under Alternative 1, four basic adverse impacts would continue to occur and are expected to worsen over time: degradation in habitat quality for riparian and wet-meadow-dependent rare, threatened, and endangered species; loss of habitat connectivity and increased habitat fragmentation; increased human-related disturbance; and continued stress on rare, threatened, and endangered species through factors such as the increasing presence of non-native species and disturbance-tolerant wildlife.

Overall, Alternative 1 would result in a local, long-term, minor to moderate, adverse impact on rare, threatened, and endangered species and the biological ORVs within the river corridor.

Cumulative Impacts

Cumulative effects to rare, threatened, and endangered species are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The impact intensity would depend on whether the effects are expected to interact cumulatively. The projects identified below include those projects that have the potential to effect populations of rare, threatened, or endangered species (i.e., within the river corridor) as well as large-scale or regional populations of the same species.

Past Actions. Natural habitats have been manipulated almost since the establishment of the park. Regional wildlife and vegetation patterns have been historically affected by logging, fire

suppression, rangeland clearing, grazing, mining, draining, damming, diversions, and the introduction of non-native species. Mammal species that survive but are extremely rare are the fisher, wolverine (possibly extinct), and Sierra Nevada red fox. Several bird species have probably been reduced in Yosemite Valley by visitor activity, but are present in less disturbed areas of the park. Willow flycatchers no longer nest in Yosemite Valley, probably due as much to parasitism by brown-headed cowbirds as to destruction of riparian and meadow habitat. Amphibians in Yosemite National Park have suffered population declines similar to those seen in the rest of the Sierra Nevada (Drost and Fellers 1996). Red-legged frogs likely were found in Yosemite Valley in the past but are now are presumed extirpated. Significant factors in their disappearance probably include reduction in perennial ponds and wetlands, and predation by bullfrogs. At higher elevations, mountain yellow-legged frogs and Yosemite toads are still present in a number of areas, but are severely reduced in population and range. Foothill yellow-legged frogs have disappeared completely from the park, if not the entire Sierra Nevada. Research continues to identify the causes of amphibian declines in the Sierra Nevada; possible causes include habitat destruction, non-native fish, pesticides, and diseases. Past and ongoing activities that affect rare, threatened, or endangered species include recreational use as well as the construction of dams, diversion walls, bridges, roads, pipelines, riprap, buildings, campgrounds, and other recreational features.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint *South Fork and Merced Wild and Scenic River Implementation Plan* for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is also a general management plan with many prescriptive goals and few actions. The plan endeavors to limit or end consumptive uses such as grazing within the river corridor and calls for the formalization of camping and launch facilities for nonmotorized watercraft. Implementation of these actions has a beneficial effect by eliminating impacts where feasible (grazing does not currently occur within the river corridor), concentrating impacts in areas able to withstand visitor use, and providing facilities that mitigate adverse effects associated with visitor use (e.g., restrooms).

Recently implemented projects have begun to reverse the centuries-long pattern of native vegetation and habitat degradation due to localized human uses in the region. These include:

- Merced River Ecological Restoration at Eagle Creek
- Happy Isles Fen Habitat Restoration
- Cascades Diversion Dam Removal

These projects are expected to have local, long-term, moderate to major, beneficial effects on habitat and rare, threatened, and endangered species because they involve the restoration of previously degraded areas and thus enhance local and regional plant and wildlife species diversity. In addition to these specific projects, one of the major goals of the *Yosemite Valley Plan* is to restore, protect, and enhance the natural resources of Yosemite Valley. Actions set forth in the plan that result in beneficial effects on rare, threatened, and endangered species include the removal of roads, facilities, and services in the Valley (including roads through Stoneman Meadow and the southern portion of Ahwahnee Meadow, most parking areas in the east Valley, and commercial trail rides in the Valley), as well as the relocation of employee housing out of the Valley and the establishment of vegetation restoration objectives (expressed as acres per habitat type).

Other past projects that have likely had a beneficial, cumulative effect on regional habitat and special-status species include transportation-related projects, which have the general goal of increasing transportation options and reducing reliance on automobiles. In addition, the *Fire Management Plan* seeks to improve ecosystem health and restore meadows and therefore would have a regional, long-term, moderate to major, beneficial effect on Yosemite's rare, threatened, and endangered species and the biological ORVs throughout the Merced River corridor.

Present Actions. Present actions in the region have the potential to result in both beneficial and adverse effects on rare, threatened, and endangered species:

- Current projects with net long-term, beneficial effects on rare, threatened, and endangered species (resulting from revegetation and habitat restoration efforts, control of competing invasive species, and improved air quality) include the Cook's Meadow Ecological Restoration, Happy Isles Dam Removal, Lower Yosemite Fall Project, Parkwide Invasive Plant Management Plan, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, and Yosemite Valley Shuttle Bus Procurement.
- Projects such as the Curry Village Employee Housing, Happy Isles to Vernal Fall Trail Reconstruction, South Fork Bridge Replacement, and Yosemite Motels Expansion could have short- and long-term, adverse effects on rare, threatened, and endangered species through construction-related, operational, and maintenance actions.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have both beneficial and adverse effects; and (3) projects anticipated to have a net adverse effect.

Examples of projects that could have a cumulative, beneficial effect on rare, threatened, and endangered species include:

- Wawona Campground Rehabilitation
- Update to the *Yosemite Wilderness Management Plan*
- Red Peak Pass Trail Rehabilitation
- Visitor Use and Floodplain Restoration Program

Although each of these projects could have slight local and short-term, adverse effects (e.g., construction-related effects), the general goal of these projects is to increase coordinated resource management and to restore sensitive ecosystems. Therefore, these projects could have a long-term, beneficial cumulative impact to regional rare, threatened, and endangered species. For example, the update to the *Yosemite Wilderness Management Plan* could result in additional restrictions on wilderness facilities and activities, reducing site-specific erosion and trampling and possibly stock use.

Reasonably foreseeable future actions that could have mixed adverse and beneficial effects on rare, threatened, and endangered species include:

- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Concept Plan

- Yosemite Lodge Area Redevelopment

Cumulative effects of these projects could be mixed, combining both adverse and beneficial effects. The net beneficial or adverse effects of these projects are difficult to predict. For example, implementation of the Yosemite Lodge Area Redevelopment project has the potential to adversely affect rare, threatened, and endangered species during construction (short term), as well as permanently displace special-status species and habitat with the relocation of Northside Drive (long term); however, removing Yosemite Lodge facilities from the River Protection Overlay and floodplain would allow for revegetation and restoration of habitat within the Merced River corridor (long-term, beneficial effect). Adverse impacts associated with construction activities could be partially mitigated through project design and implementation of Best Management Practices, compliance monitoring, and restoration.

Reasonably foreseeable future actions that could have an adverse effect on rare, threatened, and endangered species include:

- Environmental Education Campus Development Program
- El Portal Road Improvements Project (Segment D)
- Indian Cultural Center
- Northside-Southside Drive Repaving
- Out-of-Valley Campground Plan
- Yosemite Village Interim Parking Improvements

Cumulative parkwide adverse effects would be related to increased facilities, access, and regional population growth. Each of these projects could have local, minor to major, adverse effects on rare, threatened, and endangered species during construction (short term) and due to direct displacement of resources (long term). Construction and human-use-related effects on rare, threatened, and endangered species include direct displacement of species, introduction of non-native species that invade into adjacent natural areas and displace native species, fragmentation of habitats that prevents genetic mixing, alteration of natural patterns, and increased erosion and sedimentation. Although each new development would be required to mitigate or compensate for adverse effects to rare, threatened, and endangered species, the mitigation would generally be uncoordinated and would not typically replace natural ecosystem functions or values that were present throughout the region prior to Euro-American settlement.

Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 1 could have a net local, long-term, minor, adverse effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor.

Impairment

Alternative 1 would have a local, long-term, minor to moderate, adverse effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor and therefore has the potential to impair these resources for future generations.

Air Quality

Analysis

The following discussion provides an overview of the types of impacts to air quality that could occur within each segment of the Merced River corridor associated with Alternative 1. Alternative 1 includes application of the elements of the Merced River Plan (boundaries, classifications, ORVs, management zones and River Protection Overlay, and the Section 7 Determination process), and existing park management policies.

Under Alternative 1, air quality in the river corridor would continue to be influenced by local sources within the park and by regional sources upwind of the park. Local emissions sources include stationary, area, and mobile sources. Generally, the effects of local emissions sources would be limited to those areas (such as the Valley, the El Portal Administrative Site, and Wawona), where these sources are concentrated. Portions of the corridor that extend through wilderness areas would continue to be largely free of effects from local emissions sources (with the exception of prescribed fires) but would be subject to regionwide emissions trends.

Impacts in Wilderness. User capacity within wilderness areas of Yosemite National Park is currently addressed through the trailhead quota system and monitoring of wilderness resource conditions. Under Alternative 1, use of trails in wilderness areas would continue consistent with existing conditions. It is anticipated that annual day use of easily accessible wilderness areas (e.g., the trail to Half Dome) could increase with the projected increase in visitor demand. However, wilderness areas would continue to be largely free of effects from local emissions sources (with the exception of prescribed fires) but would be subject to regionwide emissions trends. Emissions from prescribed burning would continue to be controlled through implementation of smoke management policies in the 2004 *Fire Management Plan*; the current policies are intended to minimize impacts on air quality from prescribed burning within the park and region. The continuation of existing conditions would be expected to have local, long-term, negligible to minor, adverse impacts on air quality.

Impacts in Yosemite Valley. Under Alternative 1, air quality in Yosemite Valley would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources are concentrated in the Valley. Emissions from local stationary sources, such as fossil-fuel–powered mechanical equipment, would continue to be regulated through applicable Mariposa County Air Pollution Control District *Rules and Regulations*.

Local area pollution sources would continue to include regular maintenance activities, campfires, woodstoves, fireplaces, prescribed fires, and vehicle entrainment of road dust. Some of these sources would continue in the same manner and extent as under existing conditions, while others would increase in relative proportion to visitor use levels. More specifically, in the short-term, visitor levels would remain approximately the same as existing levels. Over the long-term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels.

Regular maintenance-related activities would result in temporary increases in emissions of particulate matter in the immediate vicinity of such activities. Campfires, woodstoves, and fireplaces would continue to be subject to park regulations, and related emissions would not be expected to increase because the number of campsites and housing (where campfires, woodstoves, and fireplaces are used) would remain much the same under this alternative as under

existing conditions and because campsites and housing are already full most of the year. Campfire-, woodstove-, and fireplace-related emissions would continue to affect air quality and visibility within the Valley under certain meteorological conditions. Emissions from prescribed burning would continue to be controlled through implementation of smoke management policies in the 2004 *Fire Management Plan*, as discussed above. Emissions from vehicle entrainment of road dust would continue to affect air quality, particularly in winter and early spring when drying road surfaces expose sand deposited for traction to vehicle entrainment into the atmosphere. Over the long term, road dust would increase in rough proportion to the number of vehicle-miles traveled within the park.

Local mobile sources would continue to include automobiles, trucks, and buses and would remain subject to state and federal emissions control standards and programs, which are expected to lead to a continuing decrease in emissions per vehicle-mile-traveled for the foreseeable future due to continued motor vehicle fleet turnover, cleaner burning fuels, and improved combustion technologies. In the future, the number of vehicles in the Valley on typically busy days would essentially be the same as under existing conditions; however, on an average basis, the number of vehicles would increase in rough proportion to the number of annual visitors. In general, the downward trend in emissions of ozone precursors per vehicle and per vehicle-miles traveled would more than offset the long-term incremental increase in the number of annual vehicle trips within the Valley. Based on composite vehicle emissions factors derived from data published by the state Air Resources Board, the anticipated reduction in emissions per vehicle-mile would be approximately 85% for volatile organic compounds and 75% for nitrogen oxides between existing 2004 conditions and 2020. Because the increase in vehicle-miles traveled in the Valley would be less than 75% in 2020 relative to existing conditions, these reductions in emissions per vehicle-mile would offset any increases in emissions associated with increases in annual visitors. Volatile organic compounds and nitrogen oxides are precursor compounds associated with ozone formation. However, in contrast to the ozone precursors, most of the particulate matter associated with vehicle use is related to entrainment of road dust rather than to exhaust. Thus, as explained above, particulate emissions would be expected to increase over the long term in rough proportion to the number of vehicle-miles traveled within the Valley. With respect to ozone precursors, overall local emissions in Yosemite Valley under Alternative 1 would follow the regional downward trend relative to existing conditions (as a result of more efficient vehicle engines and continued vehicle fleet turn-over), which would represent a regional, long-term, minor, beneficial effect. With respect to particulate matter, overall local emissions in Yosemite Valley under Alternative 1 could increase relative to existing conditions, resulting in a local, long-term, minor, adverse effect.

Impacts in the Gorge. Under Alternative 1, areas zoned Untrailed (1A), Open Space and Undeveloped Open Space (2A, 2A+), and Discovery (2B) in the Gorge segment would continue to be free of effects from local emissions sources but would be subject to regionwide emissions trends. Emissions from prescribed burning would continue to be controlled through implementation of smoke management policies in the 2004 *Fire Management Plan*. In the short term, user levels would remain approximately the same as existing levels. Over the long term, user numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. Areas zoned Day Use (2C), Attraction (2D), and Park Operations and Administration (3C) would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular emissions in those areas.

Impacts in El Portal. Under Alternative 1, the boundary for the El Portal segment would remain the same as that shown in the 2000 Merced River Plan. This boundary does not account for precise locations of El Portal ORVs; however, air quality is not listed as an ORV along any of the river segments, including El Portal. Under Alternative 1, management zoning in the El Portal segment of the river corridor would be limited to Day Use (2C) and Park Operations and Administrative (3C) zoning. The base zone through much of this segment is Day Use (2C). In the short term, visitor levels would remain approximately the same as existing levels. Over the long term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. These areas would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular emissions in those areas.

Impacts in Wawona. Under Alternative 1, air quality in Wawona would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources are concentrated in Wawona. Emissions from local stationary sources, such as fossil-fuel–powered mechanical equipment, would continue to be regulated through applicable Mariposa County Air Pollution Control District *Rules and Regulations*.

Local area pollution sources would continue to include regular maintenance activities, campfires, woodstoves, fireplaces, prescribed fires, and vehicle entrainment of road dust. Some of these sources would continue in the same manner and extent as under existing conditions, while others would increase in relative proportion to visitor use levels. In the short term, user levels would remain approximately the same as existing levels. Over the long term, user numbers could increase somewhat over time, but such increases would be constrained by existing facility levels.

Regular maintenance-related activities would result in temporary increases in emissions of particulate matter in the immediate vicinity of such activities. Campfires, woodstoves, and fireplaces would continue to be subject to park regulations, and related emissions would not be expected to increase because the number of campsites and housing would remain much the same under Alternative 1 as under existing conditions and because campsites and housing are already full most of the year. Campfire-, woodstove-, and fireplace-related emissions would continue to affect air quality and visibility within the Wawona area under certain meteorological conditions. Emissions from prescribed burning would continue to be controlled through implementation of smoke management policies in the 2004 *Fire Management Plan*. Emissions from vehicle entrainment of road dust would continue to affect air quality, as discussed in previous sections. Road dust would increase in rough proportion to the number of vehicle-miles traveled within the park.

Local mobile sources would continue to include automobiles, trucks, and buses and would remain subject to state and federal emissions control standards and programs, which are expected to lead to a continuing decrease in emissions per vehicle-mile-traveled for the foreseeable future. In the future, the number of vehicles in Wawona on typically busy days would be essentially the same as under existing conditions; however, the number of days during which the plan would be in effect would increase, and, on an average basis, the number of vehicles would increase in rough proportion to the number of annual visitors. In general, the downward trend in emissions of ozone precursors per vehicle would more than offset the long-term incremental increase in the number of annual vehicle trips within Wawona. As discussed above, the anticipated reduction in emissions per vehicle-mile would decrease dramatically for ozone precursor compounds between existing 2004 conditions and 2020. However, in contrast to the ozone precursors, most of the

particulate matter associated with vehicle use is related to entrainment of road dust rather than to exhaust. Thus, as explained above, particulate emissions would be expected to increase in the future in rough proportion to the number of vehicle-miles traveled within Wawona. With respect to ozone precursors, overall local emissions in Wawona under Alternative 1 would follow the regional downward trend relative to existing conditions, which would represent a regional, long-term, minor, beneficial effect. With respect to particulate matter, overall local emissions in Wawona under Alternative 1 could increase relative to existing conditions, resulting in a local, long-term, minor, adverse effect.

Summary of Alternative 1 Impacts. Under this alternative, air quality in the corridor would continue to be influenced by local pollution sources within the park and by regional sources upwind of the park. The relative importance of local and regional sources would continue to vary by season and by pollutant. Furthermore, nonwilderness portions of the corridor would be affected by local emissions sources to a much greater extent than wilderness portions. Local stationary sources would continue to be regulated under Mariposa County *Rules and Regulations*; some local area sources would continue to be subject to park regulations; and mobile sources would continue to be subject to state and federal tailpipe emissions standards.

With respect to ozone precursors, overall local emissions under Alternative 1 would follow the regional downward trend relative to existing conditions regardless of potential increases in long-term visitor levels, which would be a regional, long-term, minor, beneficial effect. With respect to particulate matter, overall local emissions under Alternative 1 could increase relative to existing conditions, resulting in a local, long-term, minor, adverse effect, because that pollutant is more closely linked to overall vehicle-miles traveled, which would increase over the long term, than to tailpipe exhaust emissions, which would decrease.

Cumulative Impacts

Cumulative effects to air quality are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The projects identified below include only those projects that could affect air quality within the river corridor or that could be affected by air pollutant sources within the river corridor.

Past Actions. Since 1950, the population of California has tripled, and the rate of increase in vehicle-miles traveled has increased sixfold. Air quality conditions within Yosemite National Park have been influenced by this surge in population growth and its associated emissions from related industrial, commercial, and vehicular sources in upwind areas as tempered by a burgeoning regulatory apparatus. Since the 1970s, emissions sources operating within the park, as well as 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. In the 1980s, restricted access policies were developed for use when traffic and parking conditions in Yosemite Valley become too congested. These policies have the effect of reducing the number of incoming vehicles and their related emissions until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as departing visitors leave the Valley) to stabilize traffic conditions.

Recent past project-specific actions that did not have a net adverse or beneficial effect on air quality, other than localized, short-term, moderate to major, adverse impacts due to construction activities, include:

- Infrastructure projects, such as Cascades Diversion Dam Removal; and Happy Isles Gauging Station Bridge Removal.
- Several trail and resource restoration projects, such as the Happy Isles Fen Habitat Restoration and the Merced River Ecological Restoration at Eagle Creek.

The El Portal Road Improvements Project, Segments A, B, and C had both locally adverse (short term during construction) and potentially regionally beneficial (long-term) effects on air quality. Short-term, construction-related effects included dust and other pollutant emissions associated with operation of construction equipment, earthmoving activities, and vehicle travel over unpaved surfaces. The safety improvements on Segments A, B, and C of El Portal Road facilitate regional transit service on that route, which could have a regional, long-term, minor, beneficial impact by reducing automobile trips.

Adoption of the 2000 *Yosemite Valley Plan* is another past project that could have a cumulative, beneficial, long-term effect on air quality. The *Yosemite Valley Plan* proposes to enhance the quality of the visitor experience in the Valley by reducing automobile congestion, limiting crowding, and expanding orientation and interpretation services. It also proposes traffic management systems and options for the size and placement of parking lots, both within and outside Yosemite Valley. Parking lot(s) outside the Valley could be used to intercept day visitors and shift those visitors to Valley-bound, hybrid diesel-electric shuttle buses.

Examples of past projects that could have a net cumulative, long-term, adverse effect on air quality include the 2004 *Fire Management Plan,* which could lead to increased use of prescribed burning techniques and could have an intermittent, long-term, adverse effect on local and regional air quality and visibility, depending on the extent to which it protects air resources.

Present Actions. Present actions in the region are separated below into three general categories: (1) projects anticipated to have a net long-term beneficial effect; (2) projects anticipated to have a net adverse, long-term effect; and (3) projects not anticipated to have a net adverse or beneficial, long-term effect.

Examples of current projects that could have a cumulative, long-term, beneficial effect on air quality include:

- Yosemite Valley Shuttle Bus Procurement, which replaces the existing fleet of 1986 diesel buses servicing Yosemite Valley with a new fleet of hybrid electric-diesel buses with lower emissions and greater fuel efficiency
- Yosemite Valley Shuttle Bus Stop Improvements, which promotes and improves the relative attractiveness of bus use
- Resource Management Building and the Curry Village Employee Housing, both of which reduce work/home commutes for some employees

Although the Yosemite Valley Shuttle Bus Stop Improvements Project has localized, short-term adverse effects (e.g., construction-related effects) associated with its implementation, its general goal is to improve regional transportation, circulation, and safety. Together, these bus-related

projects would, individually and in combination, encourage travel to the park by alternative (non-private vehicle) modes and would have a long-term, beneficial effect on air quality.

Examples of current projects that could have a net cumulative, long-term, adverse effect on air quality include various development-related projects, such as the Yosemite Motels Expansion and the Mariposa County General Plan Update. Cumulative growth in the region would have localized, short-term, construction-related impacts; over the long term, these projects would generate emissions of ozone precursors and particulate matter primarily due to associated motor vehicle trips.

Examples of current projects that are not anticipated to have a net adverse or beneficial effect on air quality, other than short-term, localized impacts due to construction activities, include:

- Infrastructure plans and projects, such as the Cook's Meadow Ecological Restoration, Happy Isles Dam Removal, Lower Yosemite Fall Project, Replacement/ Rehabilitation of Yosemite Valley Sewer Line, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, and South Fork Bridge Replacement.
- Several trail and resource restoration plans and projects, such as the Happy Isles to Vernal Fall Trail Reconstruction and the Parkwide Invasive Plant Management Plan

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are also separated below into three general categories: (1) projects anticipated to have a net beneficial, long-term effect; (2) projects anticipated to have a net adverse, long-term effect; and (3) projects not anticipated to have a net adverse or long-term, beneficial effect.

Examples of projects that could have a cumulative, long-term, beneficial effect on air quality include:

- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Management Plan
- Update to the *Yosemite Wilderness Management Plan*

Although projects allowed for under these plans could have localized, short-term adverse effects (e.g., construction-related effects), the general goal of each of these plans is to protect and enhance resources, including air resources, in Yosemite National Park. As such, these plans would be expected to have long-term, beneficial, effect on air quality.

Reasonably foreseeable future actions that could have a net cumulative, long-term, adverse effect on air quality include:

- El Portal Concept Plan
- Yosemite campground plans and projects that could increase the number of available campsites, such as the Curry Village and East Yosemite Valley Campground Improvements and Out-of-Valley Campground Plan.
- Various development-related projects, such as the Environmental Education Campus Development Program, Indian Cultural Center, and the Yosemite Lodge Area Development.

The Curry Village and East Yosemite Valley Campground Improvements and the Out-of-Valley Campground Plan could construct additional campsites, which could result in increased local

emissions from campfires, unless these projects were to provide for group fire rings rather than fire rings at each campsite.

Cumulative growth in the region would have localized, short-term, construction-related impacts; over the long term, these projects would generate emissions of ozone precursors and particulate matter primarily due to associated motor vehicle trips.

Reasonably foreseeable future actions not anticipated to have a net adverse or beneficial effect on air quality, other than short-term, localized impacts due to construction activities, include:

- Infrastructure and transportation projects, such as the El Portal Road Improvements Project and the Northside-Southside Drive Repaving
- Yosemite campground rehabilitation and parking improvement projects, such as the Wawona Campground Rehabilitation; and Yosemite Village Interim Parking Improvements
- Trail restoration projects, such as the Red Peak Pass Trail Rehabilitation
- The Visitor Use and Floodplain Restoration Program

Many of the above-noted cumulative projects would result in local, short-term, major, adverse effects on air quality due to construction activities, and, in some cases, these effects would occur within the Merced River corridor. With respect to long-term effects, a distinction can be made between ozone and particulate matter. For ozone, regional emissions trends suggest that the combination of the beneficial effect of ongoing regional, state, and federal regulatory controls (particularly mobile-source control programs) with the adverse effect of existing and future land use development and associated stationary, area, and mobile emissions sources, would result in a regional, long-term, moderate, beneficial effect. That is, the beneficial effect of past and present actions that regulate stationary and mobile emissions sources and reasonably foreseeable future actions that have the potential to reduce vehicle trips and vehicle-miles traveled would offset the adverse effect of ozone precursor emissions associated with increased cumulative growth in the region, leading to a gradual improvement in ozone air quality.

For particulate matter, the net cumulative effect is more difficult to determine because ambient concentrations of particulate matter reflect primary (i.e., directly emitted) particles as well as secondary (i.e., derived through photochemical reactions involving precursor pollutants) particles derived from emissions of volatile organic compounds, nitrogen oxides, and sulfur oxides. One of the principal sources of directly emitted particles is entrainment of dust by vehicles moving over paved roads, and this component of particulate matter would increase in proportion to increases in vehicle-miles traveled associated with cumulative growth. One of the secondary sources of particulate matter, sulfur oxides, would also continue to increase with cumulative growth. In contrast, as discussed above in connection with ozone, emissions of volatile organic compounds and nitrogen oxides would continue a downward trend despite cumulative growth, and thus, their contribution to particulate matter concentrations would diminish. Furthermore, unlike ozone, which is considered a regional pollutant, particulate matter reflects both local and regional sources, and the relative influence of these two basic types of sources changes from day to day. Thus, given the opposing emissions trends and the varying relative contributions of regional and local emissions sources, it would be speculative to conclude that the cumulative effect relative to particulate matter would be beneficial or adverse; however, the opposing emissions trends would tend to diminish the magnitude of the effect, regardless of whether the effect would be beneficial or adverse.

Since Alternative 1 would not involve any substantial construction projects, the local, short-term, major, adverse effects on air quality due to construction activities that are cited above would be due to the cumulative projects. Over the long term, with respect to ozone, conditions in the corridor would be determined almost entirely by regional emissions trends rather than by local emissions sources under Alternative 1; as discussed above, the long-term, regional effect would be beneficial, primarily due to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. With respect to particulate matter, conditions in the river corridor would be determined by both regional sources and local sources, and the relative influence of these two types of sources would vary from day to day and season to season. Given the opposing emissions trends between primary and secondary sources of particulate matter and the varying relative contributions of regional and local emissions sources, it would be speculative to conclude that the combined effect of cumulative actions and Alternative 1 would be beneficial or adverse with respect to particulate matter; however, opposing emissions trends would tend to diminish the magnitude of the effect, regardless of whether the effect would be beneficial or adverse.

Impairment

With respect to ozone precursors, overall local emissions under Alternative 1 would follow the regional downward trend relative to existing conditions, which would represent a regional, long-term, minor, beneficial effect. With respect to particulate matter, overall local emissions under Alternative 1 could increase relative to existing conditions, resulting in a local, long-term, minor, adverse effect. Overall, implementation of Alternative 1 would not impair air quality in the park.

Noise

Analysis

The following discussion provides an overview of the types of impacts to the ambient noise environment associated with Alternative 1 that could occur within each segment of the Merced River corridor. Alternative 1 provides a baseline for comparing existing conditions in the Merced River corridor with each action alternative. Alternative 1 includes the application of the elements of the Merced River Plan (boundaries, classifications, ORVs, management zones and River Protection Overlay, and the Section 7 Determination process), as well as the elements of the February 2004 User Capacity Management Program, and other park policies. However, Alternative 1 does not include full implementation of the VERP program.

Natural quiet is not listed as an ORV along any of the river segments. However, one important aspect of this environmental condition – the enjoyment of natural river sounds – is integrated into the recreation ORVs for three segments of the river, two segments in designated Wilderness (the wilderness of the main stem and the South Fork of the Merced River) and also the area below Wawona. That aspect would continue to be considered for protection and enhancement in those areas. Generally, policies and actions that protect and enhance natural quiet in the corridor arise not from the Wild and Scenic Rivers Act, but from such documents as the 1989 *Yosemite Wilderness Management Plan* (NPS 1989b) and *Reference Manual RM 47 Soundscape Preservation and Noise Management* (NPS 2003b).

Under Alternative 1, the acoustical environment in wilderness areas would generally continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would generally continue to be shaped by human-caused sources of noise, such as vehicles and recreational

activities, and by natural sources of sound, such as rushing water and wind. A parkwide monitoring effort in 1994 documented that aircraft could be heard 54% of the time in quiet areas (NPS 1994f). Non-aircraft noise can also be heard at other popular wilderness destinations close to developed areas and roads, such as wall and rims of the Valley.

Impacts in Wilderness. The enjoyment of natural river sounds is integrated into the recreation ORVs in designated Wilderness (the wilderness areas of the main stem and the South Fork of the Merced River). That aspect would continue to be considered for protection and enhancement in wilderness areas.

User capacity within wilderness areas of Yosemite National Park is addressed through the trailhead quota system and monitoring of wilderness resource conditions. Under Alternative 1, use of trails in wilderness areas would continue consistent with existing conditions. It is anticipated that annual day use of easily accessible wilderness areas (e.g., the trail to Half Dome) could increase with the projected increase in user demand.

In some wilderness areas, high-altitude aircraft overflights would continue to be the principal source of adverse noise impacts. Noise from overflights, which is an issue that is national in scope, may worsen over the long term, if there continues to be an upward national trend in the number of aircraft flights. The permit system under the *Wilderness Management Plan* would continue to minimize the noise associated with visitor use in wilderness areas by restricting the number of overnight visitors. The continuation of existing conditions would be expected to have local, long-term, negligible, adverse impacts on the ambient noise environment.

Impacts in Yosemite Valley. Under Alternative 1, the acoustical environment in the Yosemite Valley segment of the river corridor would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. Local conflicts between noise-sensitive uses and vehicular noise would continue to occur over the long term and would increase in severity due to the expected cumulative increase in visitation levels and related vehicular activity.

More specifically, in the short term, visitor levels would remain approximately the same as existing levels. Over the long term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. The gradual increase in visitation and related vehicular traffic would lead to an incremental increase in roadside noise levels. On typically busy days, roadside noise levels would be essentially the same as under existing conditions, since the same relative number of visitors would be allowed to travel to the Valley.

Developed areas of Yosemite Valley would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise and human activity in this area.

In both wilderness and nonwilderness areas of the Valley, maintenance activities (e.g., helicopter use in support of park operations) would continue under this alternative, and such activities would result in local, short-term, minor, adverse noise impacts, but it would be speculative to conclude that such activities would increase or decrease in frequency or duration.

Impacts in the Gorge. Under Alternative 1, the acoustical environment in areas of the Gorge segment of the river corridor zoned 1A, 2A, 2A+, and 2B would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights and distant roadway noise. The acoustical environment in areas zoned 2C, 2D and 3C

would continue to be shaped by human-caused sources of noise and by natural sources of sound. Local conflicts between noise-sensitive uses and vehicular noise would continue to occur over the long term and would increase in severity due to the expected cumulative increase in visitation levels and related vehicular activity.

In the short term, visitor levels would remain approximately the same as existing levels. Over the long term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. The gradual increase in visitation and related vehicular traffic would lead to an incremental increase in roadside noise levels. On typically busy days, roadside noise levels would be essentially the same as under existing conditions, since the same relative number of visitors would be allowed to travel to the Valley. Areas zoned 2C, 2D and 3C would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise in those areas.

Impacts in El Portal. Under Alternative 1, the boundary for the El Portal segment of the river corridor would remain the same as that shown in the Merced River Plan, which would remain a the 100-year floodplain or River Protection Overlay, whichever is greater. This boundary does not account for precise locations of El Portal ORVs; "natural quiet" is not listed as an ORV along any of the river segments. One important aspect of this environmental condition – the enjoyment of natural river sounds – is integrated into the recreation ORVs, but is not applicable to this segment of the river. As such, policies and actions that protect and enhance natural quiet in this segment would continue to do so regardless of the boundary location.

Under Alternative 1, management zoning in the El Portal segment of the corridor would be limited to 2C and 3C zoning. The base zone through much of this segment would be Day Use (2C). The acoustical environment in these areas would continue to be shaped by human-caused sources of noise and by natural sources of sound. Local conflicts between noise-sensitive uses and vehicular noise would continue to occur over the long term and would increase in severity due to the expected cumulative increase in visitation levels and related vehicular activity.

In the short term, visitor levels would remain approximately the same as existing levels. Over the long term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. The gradual increase in visitation and related vehicular traffic would lead to an incremental increase in roadside noise levels. On typically busy days, roadside noise levels would be essentially the same as under existing conditions, since the same relative number of visitors would be allowed to travel to the Valley. These areas would continue to experience a local, long-term, minor adverse effect due to the concentration of vehicular noise and human activity in this area.

Impacts in Wawona. Under Alternative 1, the acoustical environment in the Wawona segments of the river corridor would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. Local conflicts between noise-sensitive uses and vehicular noise would continue to occur over the long term and would increase in severity due to the expected cumulative increase in visitation levels and related vehicular activity.

In the short term, visitor levels would remain approximately the same as existing levels. Over the long term, visitor numbers could increase somewhat over time, but such increases would be constrained by existing facility levels. The gradual increase in visitation and related vehicular traffic would lead to an incremental increase in roadside noise levels. On typically busy days,

roadside noise levels would be essentially the same as under existing conditions, since the same relative number of visitors would be allowed to travel to the Valley. Wawona would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise and human activity in this area.

In both wilderness and nonwilderness areas of Wawona, maintenance activities (e.g., helicopter use in support of park operations) would continue under this alternative, and such activities would result in local, short-term, minor, adverse noise impacts, but it would be speculative to conclude that such activities would increase or decrease in frequency or duration.

Summary of Alternative 1 Impacts. The acoustical environment in wilderness areas would not be affected by Alternative 1, but would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would continue to be shaped by human-caused sources of noise and by natural sources of sound. Alternative 1 would accommodate a gradual increase in annual visitation (higher use on non-peak days), which could lead to a local, long-term, negligible to minor, adverse effect along the various roads that traverse the corridor in nonwilderness areas.

Cumulative Impacts

Cumulative effects to the ambient noise environment are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of this alternative. The projects identified below include only those projects that could affect noise within the river corridor or could be affected by noise sources within the corridor.

Past Actions. Development of facilities that include various sources of noise has occurred in and near some segments of the river corridor. Such facilities include roadways, campgrounds, lodging, and administrative buildings. Generally, these facilities were developed with limited consideration of potential noise impacts. From a regulatory standpoint, relevant state and federal noise standards typically apply to individual types of noise sources, such as automobiles and buses, rather than to overall noise levels, but the National Park Service has adopted policies (restricted access policies and the *Wilderness Management Plan*) that indirectly affect overall noise levels in the river corridor. The restricted access policies were developed for use when traffic and parking conditions in Yosemite Valley are congested. The plan has the indirect effect of limiting the amount of vehicle noise during peak periods by restricting the number of incoming vehicles until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as departing visitors leave the Valley) to stabilize traffic conditions.

The *Wilderness Management Plan* was developed to preserve a wilderness environment in which the natural world along with the processes and events that shape it are largely untouched by human interference. Implementation of the permit system for overnight camping under the *Wilderness Management Plan* reduces potential noise impacts in those areas where natural quiet is an important element of the visitor experience.

Recent past project-specific actions that did not have a net adverse or beneficial effect on the ambient noise environment, other than localized, short-term, moderate to major, adverse impacts due to construction activities, include:

- Infrastructure projects, such as Cascades Diversion Dam Removal, and Happy Isles Gauging Station Bridge Removal.

- Several trail and resource restoration projects, such as Happy Isles Fen Habitat Restoration, and Merced River Ecological Restoration at Eagle Creek. El Portal Road Improvements Project, Segments A, B, and C had both locally adverse (short-term during construction) and beneficial (long-term) effects on noise. Short-term, construction-related effects included noise from heavy equipment operations. The safety improvements on Segments A, B, and C of El Portal Road facilitate regional transit service on that route, which could have a local, long-term, negligible to minor, beneficial impact by replacing automobile trips with a smaller number of transit vehicle trips, depending on transit ridership levels.

Examples of past planning efforts that could have a net cumulative, local, long-term, adverse effect on the ambient noise environment include:

- The *Fire Management Plan*, which could lead to increased use of prescribed burning techniques and localized noise impacts associated with heavy machinery use.

Adoption of the 2000 Yosemite Valley Plan is another past project that could have a net long-term, beneficial effect on the ambient noise environment. The Yosemite Valley Plan proposes to enhance the quality of the visitor experience in Yosemite Valley by reducing automobile congestion, limiting crowding, and expanding orientation and interpretation services. It also proposes traffic management systems and options for the size and placement of parking lots, both within and outside Yosemite Valley. Parking lot(s) outside the Valley could be used to intercept day visitors and shift those visitors to Valley-bound shuttle buses.

Present Actions. Present actions in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial, long-term effect; (2) projects anticipated to have a net adverse, long-term effect; and (3) projects not anticipated to have a net adverse or beneficial, long-term effect.

Examples of current projects that could have a cumulative, beneficial, long-term effect on the ambient noise environment include:

- Yosemite Valley Shuttle Bus Procurement, which replaces the existing fleet of 1986 diesel buses servicing Yosemite Valley with a new fleet of low-noise hybrid electric-diesel buses with noticeably quieter operations.
- Yosemite Valley Shuttle Bus Stop Improvements, which will improve the relative attractiveness of bus use, thereby reducing private automobile trips.
- Resources Management Building and Curry Village Employee Housing, both of which will reduce in-Valley vehicle trips for some employees.

Although most of the aforementioned projects would have localized, short-term, adverse effects (e.g., construction-related effects), the general goal of these projects is to improve regional transportation, circulation, and safety and to reduce private automobile use. Together, these projects would, individually and in combination, reduce private automobile use and would therefore have a long-term, beneficial effect on the ambient noise environment.

To the extent that the bus-related projects cited above would replace automobile trips in the Valley with bus trips, the anticipated beneficial effect would depend upon ridership levels (and the corresponding number of automobile trips that would be avoided). The new buses are noticeably quieter than typical diesel-powered buses. Thus, these projects have the potential to contribute to a cumulative beneficial effect in the Valley, but also have the potential to offset some of the benefit with low ridership levels.

Examples of current projects that could have a net cumulative, local, long-term, adverse effect on the ambient noise environment include:

- Various development-related projects, such as Yosemite Motels Expansion; and the Mariposa County General Plan (Update).

Cumulative growth in the region would have localized, short-term, construction-related impacts; over the long term, these projects would have an adverse effect on local roadside noise levels due to increased vehicle trips.

Examples of current projects that are not anticipated to have a net adverse or beneficial effect on the ambient noise environment, other than short-term, localized impacts due to construction activities, include:

- Infrastructure projects, such as Happy Isles Dam Removal; Lower Yosemite Fall; Replacement/Rehabilitation of Yosemite Valley Force Main Sewer Line; Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan; Rehabilitate Yosemite Valley Campground Restrooms; and South Fork Bridge Replacement.

Several trail and resource restoration plans and projects, such as Cook's Meadow Ecological Restoration; Happy Isles to Vernal Fall Trail Reconstruction; Merced River Canyon Trail Acquisition; and Parkwide Invasive Plant Management Plan.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial, long-term effect; (2) projects anticipated to have a net adverse, long-term effect; and (3) projects anticipated not to have a net adverse or net beneficial, long-term effect.

Cumulative projects that could have a net, long-term, beneficial effect on the ambient noise environment include:

- Tuolumne Meadows Concept Plan.
- Tuolumne Wild and Scenic River Comprehensive Management Plan.
- Update to the *Yosemite Wilderness Management Plan*.

Although projects allowed for under these plans could have localized, short-term adverse effects (e.g., construction-related effects), the general goal of each of these plans is to protect and enhance conditions and resources, including addressing noise issues, in areas of Yosemite National Park. As such, these plans would be expected to have a beneficial, long-term effect on the ambient noise environment.

Reasonably foreseeable future actions that could have a net cumulative, long-term, adverse effect on the ambient noise environment include:

- El Portal Concept Plan.
- Yosemite campground projects and plans that could expand campgrounds, such as Curry Village and East Yosemite Valley Campground Improvements; and Out-of-Valley Campground Plan.
- Various development-related projects, such as Environmental Education Campus Development Program; Indian Cultural Center; and Yosemite Lodge Area Development.

Curry Village and East Yosemite Valley Campground Improvements and Out-of-Valley Campground Plan could expand existing campgrounds, which could result in increased localized noise impacts.

Cumulative growth in the region, would have localized, short-term, construction-related impacts; over the long term, these projects would have an adverse effect on local roadside noise levels due to increased vehicle trips.

Reasonably foreseeable future actions not anticipated to have a net adverse or beneficial effect on the ambient noise environment, other than short-term, localized impacts due to construction activities, include:

- Infrastructure and transportation projects, such as El Portal Road Improvements Project (Segment D); and Northside-Southside Drive Repaving.
- Yosemite campground rehabilitation and parking improvements projects, such as Wawona Campground Rehabilitation; and Yosemite Village Interim Parking Improvements.
- Ecological and trail restoration projects such as Red Peak Pass Trail Rehabilitation and Visitor Use and Floodplain Restoration Program.
- El Portal Old Wastewater Treatment Facility Removal

Many of the above cumulative projects would result in local, short-term, moderate to major, adverse effects on the ambient noise environment due to construction activities, and in some cases, these effects would occur within the corridor. Over the long term, statewide growth and development would accelerate the national trend in increased air travel, resulting in a local, long-term, minor, adverse effect in some portions of the corridor in wilderness areas due to increased aircraft overflights and associated intrusive noise levels. In nonwilderness areas, cumulative actions that would provide for increased transit use and reduced automobile use or that would reduce vehicle trips in the Valley could result in a local, long-term, minor, beneficial effect within the corridor based on the type of technology that is being implemented for transit purposes, but depending on the extent to which private automobile trips are diverted to transit.

Since Alternative 1 would not involve any substantial construction projects, the local, short-term, moderate to major, adverse cumulative effects on noise due to construction activities that are cited above would be due to the cumulative projects. Over the long term, in wilderness areas, noise impacts in the corridor would be determined almost entirely by cumulative trends in air travel rather than by in-park noise sources under Alternative 1; as discussed above, the national trend in air travel if it continues to increase could result in a local, long-term, minor, adverse effect on the ambient noise environment. In nonwilderness areas, the gradual increase in annual visitation to the park would likely offset the beneficial effects of those cumulative actions that would tend to reduce vehicle trips and their associated noise, resulting in a local, long-term, negligible to minor, adverse effect on noise levels in those portions of the corridor traversed by roadways.

Impairment

Alternative 1 would accommodate a gradual increase in annual visitation (higher use on non-peak days), which could lead to a local, long-term, negligible to minor, adverse effect along the various roads that traverse the corridor in nonwilderness areas. The adverse effect of this alternative on park soundscapes would not be of sufficient magnitude to impair park resources.

Cultural Resources

Archeological Resources

Analysis

The following discussion provides an overview of the types of impacts to archeological resources that could occur within each segment of the Merced River corridor from continued implementation of the park's existing user capacity management program without the VERP program. Effects on archeological resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Archeological resource components of the cultural ORV include historic and prehistoric resources related to occupation and homesteading, hunting, travel and trade, the U.S. Cavalry, and wilderness tourism. Due to their remote location and the low level of use occurring in most parts of the Yosemite Wilderness, archeology resources remain largely undisturbed.

User capacity within wilderness areas of Yosemite National Park is addressed through wilderness trailhead quotas and monitoring of wilderness resource conditions under the Wilderness Impact Management System. In Alternative 1, management of the wilderness areas would continue under the existing trailhead quota system and WIMS.

The wilderness trailhead quotas have been in place for decades and do not directly affect archeological resources. Because there is currently unused capacity under the trailhead quota system, some additional demand could be accommodated. The addition of more visitors in the wilderness could have a local, long-term, negligible, adverse impact on archeological resources due to the increased likelihood of visitor-related damage, such as surface collection, vandalism, erosion, and trampling. Overall, archeological resource components of the ORV would be protected and enhanced under this alternative.

Impacts in Yosemite Valley. Archeological resource components of the cultural ORV within Yosemite Valley include several historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, U.S. Cavalry, historic roads and trails, and early park administration.

Visitor capacity in the Valley is not actively managed on a daily basis but is regulated through facility capacities, primarily related to overnight accommodations and parking. Limits on these facilities restrict the number of overnight and day visitors to the Valley. Current management practices sometimes result in significant traffic on peak summer weekends and holidays, as visitors circle through the Valley looking for parking. When park management determines that traffic congestion in the Valley is creating unacceptable human safety and resource impacts, restricted access policies are put into effect to manage traffic.

As park visitation increases through 2020, the limitations on parking and lodging in the Valley under Alternative 1 would restrict the number of visitors that can access the many cultural resources within the Valley. However, since Valley visitation is currently below peak levels reached in the last decade, there may be sufficient capacity to accommodate some increased visitation between now and 2020.

Under Alternative 1, there would be no change to archeological resources in the Valley in the short term. In the long term, there could be local, minor, adverse effects related to increased visitor use and a corresponding increase in the likelihood of visitor-related damage such as vandalism, surface collection, erosion, and trampling.

Impacts in the Gorge. Archeological components of the cultural ORV for the Gorge segment include historic and prehistoric sites related to occupation, the Civilian Conservation Corps, early roads and trails, road development, and early tourism. Many parts of the gorge are inaccessible to visitors.

Under Alternative 1, user capacity would continue to be restricted by the existing level of parking in the Gorge. The current parking capacity would allow for some additional use during the nonpeak season. During peak periods when restricted access is implemented for Yosemite Valley, parking areas in the Gorge become more congested. The existing limits on available parking in the Gorge are expected to limit use levels in this area to the current peak level. Since use levels in the Gorge are relatively low and access is limited by available parking, Alternative 1 is not expected to have any effect on archeological resources for this segment in the long or short term.

Impacts in El Portal. Archeological resources for El Portal consist of some of the oldest prehistoric sites within the Merced River corridor. Prehistoric and historic archeological sites and districts in El Portal include examples of villages, homesteads, early tourism, and the mining, railroad, and timber industries.

The boundary for the El Portal segment of the river in this alternative is based upon the 100-year floodplain or the River Protection Overlay, whichever is greater. The zoning for the El Portal corridor under this alternative calls for park administrative uses (3C zoning) in existing developed areas north and south of the river, and Day Use (2C) zoning for undeveloped areas directly adjacent to the river. Although this zoning might allow for future development of visitor facilities, much of the 2C area is within the River Protection Overlay and is unlikely to be developed.

The area zoned Park Operations and Administration (3C) could allow for the development of facilities or the removal of existing facilities. Most of the facilities currently located in the 3C zones were constructed prior to the river's designation as Wild and Scenic. Much of this area contains archeological resources, and while some of these have been previously disturbed, future development has the potential to adversely affect these resources. If this development or removal occurred and earth-moving activities were required, then intact archeological resource(s), which are identified as an ORV, could be disturbed. This is considered a local, long-term, minor to major, adverse impact, and the intensity of impact would depend on the nature, location, and design of the facility to be developed or removed as well as the quantity and data potential of the archeological resource(s) affected. These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and with other elements of the Merced River Plan. Under the Merced River Plan, ORVs must be protected on a segment-wide basis.

The areas zoned Day Use (2C) could allow construction of new facilities and hardened surfaces and the removal or relocation of existing facilities. Development within these management zones also could concentrate human use at specific locations in El Portal, which could affect archeological resources by causing trampling, surface collection, and erosion. However, by providing more structured visitor experiences in the river corridor, use could be directed away

from known archeological resources, which would reduce the likelihood of visitor-related damage. If such development or construction occurred and earth-moving activities were required, then intact archeological resource(s), which are identified as an ORV, could be disturbed. This is considered a local, long-term, minor to major, adverse impact, and the intensity of impact would depend on the nature, location, and design of the facility to be developed or removed as well as the quantity and data potential of the archeological resource(s) affected. Like the actions in the 3C zones, these actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and with other elements of the Merced River Plan. Under the Merced River Plan, ORVs must be protected on a segment-wide basis. Because the river corridor boundary in this alternative would be smaller than under the three action alternatives, fewer archeological resources fall within the river corridor boundary. The absence of a VERP framework in this alternative would not enable the park to monitor the effects of use-related impacts on archeological resources.

User capacity for visitors within El Portal is currently managed via parking capacity in the area. Continuation of the existing user capacity program in the El Portal segment would not change the visitor facilities available on adjacent private lands, the lack of visitor facilities on park lands, or the amount of informal parking available. Because current use does not exceed existing parking capacity, there is potential for an increase in visitor use in El Portal adjacent to the river. This potential increase could have long-term negligible to minor adverse impacts to cultural resources. Additionally, continuation of existing user capacity management policies under the No Action Alternative would not require changes to employee housing, amenities, or other facilities located in El Portal. Park planning efforts and future development in El Portal would continue to be based on the goals of the *General Management Plan* and on existing utility capacities. Since the *General Management Plan* calls for increased employee housing in El Portal, it is likely that the level of employee housing would increase in the future, while remaining within utility capacities.

Overall, Alternative 1 is expected to result in long-term, minor to major, adverse effects on archeological resources within the El Portal segment of the river corridor.

Impacts in Wawona. Archeological resources in Wawona include historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Visitor capacity in Wawona is not actively managed but is limited through available overnight lodging and parking areas on park lands. Visitor lodging is also provided on private lands within the river corridor. Continuation of the existing user capacity policies in Wawona could allow for a slight increase in visitor use over the next few decades, which could increase the likelihood of visitor-related damage to archeological resources such as surface collection, vandalism, erosion, and trampling. Therefore, the existing user capacity program in Wawona could result in local, long-term, minor, adverse impacts to archeological resources.

Summary of Alternative 1 Impacts. Compliance with existing park policies, including the 1999 Programmatic Agreement, and federal laws, such as the National Historic Preservation Act, would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Alternative 1 would continue existing user capacity programs for areas within the Merced River corridor. User capacity is managed through trailhead quotas in wilderness areas and primarily through facility-based capacities in most other areas. Continuation of these existing user capacity programs is not expected to result in any changes to cultural resource ORVs in the short term. In the long term, Alternative 1 is expected to result in a local, long-term, minor, adverse impact to archeological resources due to the increased likelihood of visitor-related damage to these resources and the increased likelihood of development outside of the El Portal river corridor boundary.

Cumulative Impacts

Cumulative effects on archeological resources are based on an analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. The projects identified below include only those projects that could affect archeological resources within the river corridor or in the park vicinity.

Past Actions. Archeological resources are subject to damage from development, vandalism, visitor access, and natural processes such as flooding and wildland fires.

In general, archeological resources within the Merced River corridor are the result of thousands of years of human occupation. Development of facilities within the river corridor has disturbed or destroyed numerous archeological resources and compromised the integrity of numerous other such resources. Park projects from the recent past that have had a minor, adverse effect on historic archeological resources within the river corridor include:

- Cascades Diversion Dam Removal

Present Actions. Archeological resource sites in the Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona segments of the river corridor are considered to be at risk due to existing facility development. These sites are at or adjacent to trails, structures, utility systems, and other facilities and are subject to ongoing disturbances such as trampling, surface collection, and ground disturbance associated with facility maintenance. Certain specific projects have been mitigated to have no adverse effect, these include:

- Lower Yosemite Fall Project
- Cook's Meadow Ecological Restoration
- South Fork Bridge Replacement
- Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan

Reasonably Foreseeable Future Actions

The extensive grading and ground disturbance that could be required for the reasonably foreseeable future projects listed below could disturb individual archeological resources. Each of these projects is within an archeologically sensitive area, such as a river valley or a mountain meadow. Specific impacts would depend on the nature, location, and design of the facility to be developed or removed as well as the quantity and data potential of the archeological resource(s) affected. Any disturbance of an individual archeological resource is considered to be a long-term, adverse impact.

- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Road Improvements Project (Segment D)

- Indian Cultural Center
- Wawona Campground Rehabilitation
- Yosemite Lodge Area Redevelopment
- Yosemite Village Interim Parking Improvements
- El Portal Concept Plan
- Tuolumne Meadows Concept Plan
- El Portal Old Wastewater Treatment Facility Removal

Overall, these cumulative actions in combination with Alternative 1 could have a net long-term, moderate, adverse impact on archeological resources with the Merced River corridor.

Impairment

Alternative 1 could result in local, long-term, minor to moderate, adverse effects on archeological resources. These effects are not expected to impair the park's archeological resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Traditional Cultural Resources

Analysis

The following discussion provides an overview of the types of impacts to traditional cultural resources that could occur within each segment of the Merced River corridor from implementation of the park's user capacity management program without the VERP program. Effects on traditional cultural resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Traditional cultural resources in the wilderness include continuing uses such as the travel/trade routes connecting the east and west slopes of the Sierra Nevada range. Existing conditions of these travel/trade routes (which includes the routes themselves and the American Indian's ability to access these routes) are good. User capacity within wilderness areas of Yosemite National Park is currently addressed through trailhead quotas and monitoring of wilderness resource conditions under the Wilderness Impact Management System. In Alternative 1, management of the wilderness areas would continue under the existing trailhead quota system and WIMS.

The wilderness trailhead quotas have been in place for decades and do not directly affect traditional cultural resources. Because there is currently unused capacity under the trailhead quota system, some additional demand could be accommodated. The addition of more visitors in

the wilderness could have a local, long-term, minor, adverse impact on traditional cultural resources due to the increased likelihood of visitor-related damage to the trails and an increased likelihood for encounters with other visitors.

Impacts in Yosemite Valley. Traditional cultural resources in Yosemite Valley encompass many natural and cultural features throughout the Valley that are traditionally valued by local American Indian groups, including gathering areas, religious sites, village sites, and cemeteries.

Currently some of these areas are experiencing moderate adverse effects from concentrated visitor-use such as trampling and erosion. Other traditional cultural resources are actively being managed through the use of prescribed fire and invasive plant removal by the National Park Service (NPS 1997p). Under Alternative 1 there would be no change to traditional cultural resources in the Valley in the short term. In the long term, there could be local, minor, adverse effects related to increased visitor use and a corresponding increase in the likelihood of visitor-related damage, such as vandalism, erosion, and trampling.

Impacts in the Gorge. Traditional cultural resources in the Gorge segment include gathering areas and villages. Traditional cultural resources in the gorge are actively being managed through the use of prescribed fire and invasive plant removal by the National Park Service (NPS 1997p). Under Alternative 1, user capacity would continue to be restricted by the existing level of parking in the Gorge. Use levels in the Gorge are generally relatively low, as access is limited by available parking and topography. For example, during peak periods when restricted access is implemented for Yosemite Valley, parking areas in the Gorge become more congested. The existing limits on available parking in the Gorge are expected to limit use levels in this area to the current peak level. This parking capacity would allow for some additional use during the non-peak season. These use levels could increase in the nonpeak season, which could have both short term and long term, minor, adverse effects on traditional cultural resources for the segment under Alternative 1.

Impacts in El Portal. Traditional cultural resources in El Portal consist of, but are not limited to, gathering areas, cemeteries, geological features of traditional spiritual importance, and prehistoric and historic village sites. Like Yosemite Valley, contemporary associated tribes consider all of El Portal to be a traditional use area.

Currently, some of these areas are experiencing adverse effects from concentrated human-use due to roads, housing, parking, and other amenities located in proximity to El Portal's traditional cultural resources. These effects include trampling and erosion. Other traditional cultural resources are actively being managed through the use of prescribed fire and invasive plant removal by the National Park Service (NPS 1997p).

The boundary for the El Portal segment of the river in this alternative is based on the 100-year floodplain or the River Protection Overlay, whichever is greater. The zoning proposed for the El Portal corridor under Alternative 1 calls for Park Operations and Administration (3C) in existing developed areas north and south of the river, and Day Use (2C) for undeveloped areas directly adjacent to the river. Although this zoning plan might allow for future development of visitor facilities, much of the 2C zone is within the River Protection Overlay and is unlikely to be developed. The areas zoned 3C south and north of the river have the potential to be developed as administrative facilities. If development occurs in these zones, there is a potential to adversely affect traditional cultural resources. However, no new development would occur inside the

corridor without further site-specific planning and compliance that would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and the existing elements of the Merced River Plan. The adverse effects of new development would likely be local, long term, and negligible to moderate.

User capacity for visitors within El Portal is currently managed via parking capacity in the area. Continuation of the existing user capacity program in the El Portal segment would not change the visitor facilities available on adjacent private lands, the lack of visitor facilities on park lands, or the amount of informal parking available. Additionally, continuation of user capacity management policies under the No Action Alternative would not require changes to employee housing in El Portal, amenities, or other facilities located there. Park planning efforts and future development in El Portal would continue to be based on the *General Management Plan* and on existing utility capacities. Since the *General Management Plan* calls for increased employee housing in El Portal, it is likely that the level of employee housing would increase in the future, while remaining within utility capacities. Therefore, continued implementation of the existing user capacity program is not expected to result in any changes to traditional cultural resources in El Portal.

Overall, Alternative 1 is expected to result in long-term, negligible to moderate, adverse effects on traditional cultural resources within the El Portal segment of the river corridor.

Impacts in Wawona. Traditional cultural resources in Wawona include, but are not limited to, gathering areas, cemeteries, and village sites. Currently, some of these areas are experiencing adverse effects of concentrated visitor-use such as trampling and erosion. Other traditional cultural resources are actively being managed through the use of prescribed fire and invasive plant removal by the National Park Service (NPS 1997p).

Visitor capacity in Wawona is not directly managed but is limited through available overnight lodging, camping, and parking areas on park lands. Visitor lodging is also provided on private lands within the river corridor. Continuation of the existing user capacity policies in Wawona could allow for a slight increase in visitor use over the next few decades, which could increase the likelihood of visitor-related damage to traditional cultural resources such as vandalism, erosion, and trampling. The lack of a VERP program would not enable the National Park Service to detect these effects and take management actions. Therefore, the existing user capacity program in Wawona is not expected to have new, short term impacts but could result in local, long-term, minor, adverse impacts to traditional cultural resources.

Summary of Alternative 1 Impacts. Compliance with existing park policies, including the 1999 Programmatic Agreement; the 1997 Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities; and federal regulations such as the National Historic Preservation Act, American Indian Religious Freedom Act, and Native American Graves Protection and Repatriation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Alternative 1 would continue existing user capacity programs for areas within the Merced River corridor. User capacity is managed through trailhead quotas in wilderness areas and primarily through facility-based capacities in most other areas. Continuation of these existing user capacity programs is not expected to result in any changes to traditional cultural resources in the short

term. In the long term, Alternative 1 is expected to result a local, long-term, minor, adverse impact to traditional cultural resources due to the increased likelihood of visitor-related damage to these resources and the increased likelihood of development outside of the El Portal river corridor boundary.

Cumulative Impacts

Cumulative effects on traditional cultural resources are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. The projects identified below include only those projects that could affect traditional cultural resources within the river corridor or in the park vicinity.

Past Actions. Traditional cultural resources have been lost or damaged in Yosemite National Park through past development, visitor use, natural events, and widespread disruption of cultural traditions. Nevertheless, Yosemite retains many sites and resources of significance to local and culturally associated American Indians.

In general, traditional cultural resources within the Merced River corridor are the result of thousands of years of human occupation. Development of facilities within the river corridor has disturbed or destroyed numerous traditional cultural resources and compromised the integrity of numerous other such resources.

The Cascades Diversion Dam Removal project is a recent park project that benefited traditional cultural resources within the river corridor by restoring the river and its banks back to a more natural state and allowing native vegetation to repopulate the banks.

The *Yosemite Valley Plan,* completed in 2000, calls for projects that will have both adverse and beneficial effects on traditional cultural resources by damaging gathering areas and historic villages or restricting access to traditional use places, and by beneficially affecting traditional cultural resources by restoring native plant habitat.

Present Actions. Projects currently underway that will improve traditional cultural resources in the long term include the Cook's Meadow Ecological Restoration, Parkwide Invasive Plant Management Plan. These two projects benefit native plant communities through restoration, improved site development, or ecosystem planning. Traditional gathering areas are positively affected in the long term by these projects.

The Lower Yosemite Fall Project and the South Fork Merced River Bridge Replacement adversely affect traditional cultural resources in the short term during construction. The Lower Yosemite Fall Project site design will continue to adversely affect traditional cultural properties in the long term. Potential adverse affects from the Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan on traditional cultural resources are being mitigated by salvaging and reusing sod, resulting in no permanent damage.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects that could adversely affect traditional cultural resources; (2) projects that could beneficially affect traditional cultural resources; and (3) projects that could either adversely or beneficially affect traditional cultural resources. Examples of projects that could have a cumulative, adverse effect on traditional cultural resources include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Wawona Campground Rehabilitation
- El Portal Road Improvements Project (Segment D)

These three projects could adversely affect traditional cultural resources by damaging gathering areas and historic villages or restricting access to traditional use places. These projects could have long-term, adverse impacts on traditional cultural resources. The intensity of this impact would depend on the extent to which gathering sites were damaged and access to traditional use places was restricted.

Examples of projects that could have a cumulative, beneficial effect on traditional cultural resources include:

- Yosemite Lodge Area Redevelopment
- Indian Cultural Center
- Visitor Use and Floodplain Restoration Program
- El Portal Old Wastewater Treatment Facility Removal

The removal of the wastewater treatment facility at El Portal would benefit traditional cultural resources by restoring the area to a more natural state. The Yosemite Lodge project could benefit traditional cultural resources through sensitive site design. The Indian Cultural Center will provide a place and facilities for the local American Indian community to assemble in their ancestral land (Yosemite Valley).

Examples of projects that could have adverse and beneficial effects on traditional cultural resources include:

- El Portal Concept Plan
- Tuolumne Meadows Concept Plan

The El Portal Concept Plan and the Tuolumne Meadows Concept Plan could adversely affect traditional cultural resources by damaging gathering areas and historic villages or restricting access to traditional use places, and could beneficially affect traditional cultural resources by restoring native plant habitat.

The cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor, beneficial impact on traditional cultural resources because the long-term, beneficial impacts associated with the management of natural resources and river processes in the vicinity of the Merced River corridor would be partially offset by the short- and long-term, adverse impacts associated with damaging gathering areas or restricting access to traditional use places.

Overall, these cumulative actions in combination with Alternative 1 could have a net long-term, minor, beneficial impact on traditional cultural resources within the Merced River corridor. They could also result in a long-term, minor, adverse impact due to increased development and visitor-related damage.

Impairment

Alternative 1 could result in local, long-term, minor, adverse effects on traditional cultural resources. Therefore, this alternative is not expected to impair the park's traditional cultural resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Historic Sites, Structures, and Landscapes

Analysis

The following discussion provides an overview of the types of impacts to historical sites, structures, and landscapes that could occur within each segment of the Merced River corridor from implementation of the park's user capacity management program without the VERP program. Effects on these resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Historic sites, structures, and landscapes in the wilderness include the Merced Lake High Sierra Camp, John Muir trail, remains of the original Yosemite Grant boundary fence, U.S. Cavalry trails, and sites associated with early stock grazing.

User capacity within wilderness areas of Yosemite National Park is addressed through trailhead quotas and monitoring of wilderness resource conditions under the Wilderness Impact Management System. In Alternative 1, management of the wilderness areas would continue under the existing trailhead quota system and WIMS.

The wilderness trailhead quotas have been in place for decades, and do not directly affect historic sites, structures, and landscapes. Because there is unused capacity under the trailhead quota system, some additional demand can be accommodated. The addition of more visitors in the wilderness could have a local, long-term, minor, adverse impact on historic sites, structures, and landscapes due to the increased likelihood of visitor-related damage such as surface collection, vandalism, erosion, and trampling.

Impacts in Yosemite Valley. Historic sites, structures, and landscapes in Yosemite Valley include the Yosemite Valley Historic District, which consists of historic bridges, a campground, orchards, trails, roads, residences, administrative facilities, and visitor accommodations. This district includes the Yosemite Village Historic District and the Curry Village Historic District. The Valley also contains several National Register-eligible or -nominated historic buildings and three National Historic Landmarks: the LeConte Memorial Lodge, the Ranger's Club, and The Ahwahnee.

Under Alternative 1, there would be no change to historic sites, structures, and landscapes in the Valley in the short term because visitor use levels would remain similar to current levels. In the long term, there could be local, minor, adverse effects related to increased visitor use and a corresponding increase in visitor-related damage, such as vandalism, surface collection, erosion, and trampling.

Impacts in the Gorge. Historic sites, structures, and landscapes in the Gorge segment include the Merced Canyon Travel Corridor and the powerhouse associated with the Yosemite Valley Hydroelectric Power Plant.

Under Alternative 1, user capacity would continue to be restricted by the existing level of parking in the Gorge. The current parking capacity would allow for some additional use during the nonpeak season. During peak periods when restricted access is implemented for Yosemite Valley, parking areas in the Gorge become more congested. The existing limits on available parking in the Gorge are expected to limit use levels of this area to the current peak level. Since use levels in the Gorge are relatively low and access is limited by available parking, Alternative 1 is not expected to have any effect on historic resources for the segment in the long or short term.

Impacts in El Portal. Historic sites, structures, and landscapes in the El Portal segment consist of the Old El Portal cultural landscape, the Murchison (National Lead Company) structures, railroad houses, the chapel, the old store, the El Portal Market, the old hotel (Yosemite Institute administrative offices), Bagby Station, and other sites and structures related to early industry, homesteading, and tourism in the Merced River corridor. Some of these structures are privately owned or used only as National Park Service or park partner's administrative facilities. Because these structures are not open to the public, they are unlikely to experience adverse effects from visitor use.

The boundary for the El Portal segment of the river in this alternative is based on the 100-year floodplain or the River Protection Overlay, whichever is greater. The zoning proposed for the El Portal corridor under Alternative 1 calls for primarily Park Operations and Administration (3C) in existing developed areas north and south of the river, and primarily Day Use (2C) for undeveloped areas directly adjacent to the river. Although this zoning designation might allow for future development of visitor facilities, much of the 2C is within the River Protection Overlay and is unlikely to be developed. The areas zoned 3C south and north of the river have the potential to be developed as administrative facilities. These areas contain historic sites, structures, and/or landscapes and, if developed further, have the potential to adversely affect these resources. The potential actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. Therefore the adverse effects of new development would likely be local, long term, and minor to moderate.

Because the boundary in Alternative 1 is smaller than under the three action alternatives, fewer historic sites, structures, and landscapes fall within the river corridor boundary. Although all ORVs are protected regardless of whether they fall within or outside of the boundary, the resources within the boundary would likely receive greater protection due to the stringent requirements of the existing Merced River Plan elements and the Wild and Scenic Rivers Act. The smaller boundary in Alternative 1 could result in a local, long-term, minor to moderate, adverse effect to historic sites, structures, and landscapes.

User capacity within El Portal is currently managed via parking capacity in the area. Continuation of the existing user capacity program in the El Portal segment would not change the visitor facilities available on adjacent private lands, the lack of visitor facilities on park lands, or the amount of informal parking available. Therefore, the existing user capacity program is not expected to result in any changes to historic resources in El Portal.

Alternative 1 would allow for an increase in employee housing in El Portal, which could substantially increase the population of El Portal and require new development within the El Portal Cultural Landscape. This new development will comply with the proposed El Portal design guidelines, and any treatment of the cultural landscape would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. The adverse effects of new development would likely be local, long term, and minor to moderate.

Overall, Alternative 1 is expected to result in long-term, minor to moderate, adverse effects on historic resources within the El Portal segment of the river corridor.

Impacts in Wawona. Historic sites, structures, and landscapes in Wawona include the Washburn cultural landscape, the Chowchilla Mountain Road, Civilian Conservation Corps structures, the Wawona Covered Bridge, the Wawona Hotel (a National Historic Landmark), and the Pioneer Yosemite History Center. Many relocated and individually listed National Register historic structures comprise the Pioneer Yosemite History Center.

Visitor capacity in Wawona is not actively managed but is limited through available overnight lodging and parking areas on park lands. Visitor lodging is also provided on private lands within the river corridor. Continuation of the existing user capacity policies in Wawona could allow for a slight increase in visitor use over the next few decades, which could increase the likelihood of visitor-related damage to historic sites, structures, and landscapes such as vandalism, erosion, and trampling. Therefore, the existing user capacity program in Wawona could result in local, long-term, minor, adverse impacts to these resources.

Summary of Alternative 1 Impacts. Compliance with existing park policies, including the 1999 Programmatic Agreement, Yosemite National Park Design Guidelines, and federal regulations such as the National Historic Preservation Act, would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Alternative 1 would continue existing user capacity programs for areas within the Merced River corridor. User capacity is managed through trailhead quotas in wilderness areas and primarily through facility-based capacities in most other areas. Continuation of the existing user capacity programs is not expected to result in any changes to historic resources in the short term. In the long term, Alternative 1 is expected to result a local, minor, adverse impact to some historic sites, structures, and landscapes due to increased likelihood of visitor-related damage to these resources and the increased likelihood of development outside of the El Portal river boundary. Other historic resources in El Portal are no affected by visitor use. These include the Murchison structures, the Yosemite Institute administrative offices, Bagby Station, the El Portal railroad houses, the El Portal chapel, and the old store in El Portal.

Cumulative Impacts

Cumulative effects on cultural resources as they relate to historic sites, structures, and landscapes are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. The projects identified below include only those projects that could affect historic sites, structures, and landscapes within the river corridor or in the park vicinity.

Past Actions. Past development, visitor use, and natural events have destroyed or damaged historic sites, structures, and landscapes. In wilderness areas, historical landscape resources include remnants of early stock grazing, trails, and work camps. In Yosemite Valley, Wawona, and El Portal, cultural landscape resources include early hotels, bridges, stores, studios, cabins, farms, and railroad structures that were associated with early Euro-American pioneer settlement and industries. In the Merced River gorge, cultural landscape resources include segments of the early wagon road and engineering projects. Rapidly disappearing structures and sites in other areas include homestead cabins, barns, road and trail segments, bridges, mining complexes, railroad and logging facilities, blazes, and campsites. These resources are reminders of the area's ranching, grazing, lumbering, and mining history.

Past park projects that adversely affected historic sites, structures, and landscapes within the river corridor include:

- Cascades Diversion Dam Removal
- Cascades Housing Removal

Both of these river restoration projects required removal of historic structures that were contributing elements to the Yosemite Valley Hydroelectric System, a National Register-nominated property. The removal of these structures resulted in long-term, moderate, adverse impacts.

Every year, the park's historic preservation crew restores or rehabilitates historic structures throughout the front country and wilderness, beneficially affecting these resources in the long term. Most recently, the crew completed the restoration of the covered bridge in Wawona.

The implementation of projects outlined in the *Yosemite Valley Plan* may have adverse and beneficial impacts on historic sites, structures, and landscapes. The plan prescribed the removal or benign neglect of some resources, resulting in a long-term, moderate, adverse effect. The plan may require removal of historic orchards and bridges that could be eligible for listing on the National Register or as contributing elements to a National Register historic district. Additionally, these plans could add noncontributing elements to historic landscapes. Conversely, the plan also prescribed management actions to treat historic sites, structures, and landscapes.

Present Actions. Projects currently underway that adversely affect historic sites, structures, or landscapes include the Cook's Meadow Ecological Restoration, which necessitated the removal of a historic road, and the Lower Yosemite Fall Project, which benefited the Yosemite Valley historic landscape through improved site design that complements existing significant historic landscape characteristics.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into two general categories: (1) projects anticipated to have a net

adverse effect; and (2) projects anticipated to have adverse and beneficial effects to historic sites, structures, and landscapes.

Projects anticipated to have a net adverse effect include:

- Yosemite Village Interim Parking Improvements
- El Portal Road Improvements Project (Segment D)
- Indian Cultural Center
- Wawona Campground Rehabilitation
- Environmental Education Campus Development Program

These projects require new development that will likely have a negligible to minor impact on historic sites, structures, or landscapes within Yosemite Valley. Yosemite Village Interim Parking Improvements will alter historically significant circulation routes, the El Portal Road Improvements Project will possibly alter dimensions or materials of this historic road, and the Indian Cultural Center will add structures to a currently undeveloped portion of the Yosemite Valley Historic District. The Environmental Education Campus Development Program will require the redevelopment of historic structures and landscapes.

Projects anticipated to have adverse and beneficial effects include:

- El Portal Concept Plan
- Tuolumne Meadows Concept Plan
- The Tuolumne River Wild and Scenic River Comprehensive Management Plan

Each of these plans could prescribe removal or benign neglect of historic sites, structures, and landscapes, resulting in a long-term, moderate, adverse effect. Additionally these plans could add noncontributing elements to historic landscapes.

Conversely, each of these plans could prescribe management actions to protect historic sites, structures, and landscapes, resulting in a local, long-term, moderate, beneficial impact. The overall impact intensity of any planning project would depend on the extent to which the plan's recommendations were implemented.

The cumulative projects would have a long-term, moderate, adverse impact on historic sites, structures, and landscapes because these projects would, individually and in combination, disrupt historical circulation and land use patterns, add noncontributing elements to the cultural landscape, or result in the removal of historic fabric or resources. The intensity of the overall impact would depend on the degree of the impacts associated with the individual projects that would affect cultural landscape resources.

Overall, these cumulative actions in combination with Alternative 1 could have a net long-term, moderate, adverse impact on historic sites, structures, and landscapes within the Merced River corridor.

Impairment

Impacts associated with Alternative 1 are not expected to impair the park's historic sites, structures, and landscapes for future generations.

National Historic Preservation Act Section 106 Summary

Under the 1999 Programmatic Agreement and the regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places.

Visitor Experience

Analysis

The following discussion provides an overview of the types of impacts to recreation, interpretation and orientation, visitor services, and wilderness experience that could occur within each segment of the Merced River corridor under the No Action Alternative. Effects on visitor experience from the proposed corridor boundary and zoning in El Portal are also addressed in the El Portal segment discussion.

Recreation

Analysis

The following discussion provides an overview of the types of impacts to recreational resources and the recreation ORVs that could occur within each segment of the Merced River corridor from implementation of existing user capacity policies. Effects on recreation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Recreation ORVs in the Wilderness segment include outstanding opportunities for solitude along the river, primitive and unconfined recreation, and recreational opportunities such as day hiking, backpacking, horseback riding and packing, camping, and the enjoyment of natural river sounds.

User capacity within wilderness areas of Yosemite National Park is currently addressed primarily through trailhead quotas for overnight visitors, monitoring of wilderness resource conditions under the Wilderness Impacts Monitoring System, and management zoning of the Wilderness areas, which calls for very low levels of facility development and visitor use in wilderness areas. There are currently no restrictions on day use within wilderness areas. Because most Wilderness trails receive relatively low levels of use, and because day use by hikers causes few impacts, quotas have not been needed. Under Alternative 1, wilderness areas would continue to be managed in this manner.

The existing wilderness trailhead quotas have been in place for decades, and in general seem to provide sufficient access for people desiring overnight wilderness access, while providing for the solitude desired from a wilderness experience and protection of natural, cultural, and wilderness resources. Although park visitation is expected to increase through 2020 under Alternative 1, there is currently some unused capacity within the Wilderness Trailhead Quota System. Wilderness overnight visitation numbers are down from the levels of the 1980s, but use has begun increasing again in recent years. Thus, most visitors who want to access the Wilderness can, although they may not be able to obtain a permit for their preferred destination.

Under Alternative 1, numbers of day visitors in wilderness areas would be expected to continue to increase in areas accessible from the Valley, such as Little Yosemite Valley. The increase in use in these areas could result in local, long-term, minor to moderate, adverse effects on recreation and the recreation ORVs, due to decreased opportunities for solitude.

Alternative 1 is not expected to result in any substantive change in access to day use or overnight recreation opportunities in wilderness areas. Alternative 1 would be expected to have a local, long-term, minor to moderate, adverse effect on recreation and the recreation ORVs in those areas affected by day visitors. Otherwise, Alternative 1 would not affect recreation in wilderness areas and the spectrum of recreational opportunities encompassed in the recreation ORV would continue to be protected and enhanced.

Impacts in Yosemite Valley. The recreation ORVs in Yosemite Valley include opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking.

Visitor capacity in the Valley is not actively managed on a daily basis, but is regulated through facility capacities (primarily related to overnight accommodations, parking, and utilities), management zoning (which provides guidance on facility development and visitor use levels), and other use limits implemented through the Superintendent's Compendium or other policies. These existing policies, particularly the limits on overnight use and facilities, indirectly limit the number of visitors to the Valley. Current management practices sometimes result in significant traffic on peak summer weekends and holidays, as visitors circle through the Valley looking for parking. Park management sometimes implements restricted access policies to manage traffic into Yosemite Valley. These are implemented when traffic congestion is creating unacceptable human safety and resource impacts. Visitor surveys over the years have indicated that traffic congestion and parking are two of the main factors that adversely affect visitor experience in the Valley (Gramann 1992; ORCA 2000; Manning et al. 1999a, b).

In the short term, the continuation of existing policies under the No Action Alternative would not be expected to affect visitor access to recreational opportunities. As park visitation increases through 2020, the limitations on parking and lodging in the Valley would limit the number of visitors who can access the many recreation activities within the Valley during peak periods. In the long term, assuming no increase in overnight accommodations or day-visitor parking in the Valley, there would likely be more days when potential day visitors could not find parking in the Valley, were subject to restricted access controls in trying to reach the Valley, or perceived adverse effects to their experience related to traffic congestion and crowding. These adverse effects would likely occur only during peak periods, reducing the overall effect on recreation to a local, long-term, minor to moderate, adverse effect.

Impacts in the Gorge. The recreation ORVs for the Gorge segment of the river corridor are related to the opportunities for a spectrum of recreational opportunities, such as picnicking, fishing, photography, and sightseeing. Access to the gorge is limited by available parking along Highway 140 and at two off-road parking areas. User capacity for the gorge is currently managed through parking access.

Under Alternative 1, user capacity would continue to be limited primarily through the existing level of parking in the gorge. It is likely that the existing parking capacity would allow for some additional use during non-peak seasons. During peak periods and when restricted access is

implemented for Yosemite Valley, parking areas in the gorge become more congested. The existing limits on available parking in the gorge would be expected to limit peak uses of this area to the current peak level of use. Increased visitation could result in reaching this peak on more days, but would likely be limited to peak periods. Since use levels in the gorge are relatively low and access is limited by available parking, the overall effect of Alternative 1 on access to recreation activities in the gorge, the quality of recreation experiences, and the recreation ORVs in the long term is expected to be local, negligible to minor, and adverse.

Impacts in El Portal. The recreation ORVs for El Portal are related to a range of river-related activities, and in particular whitewater rafting and kayaking. In addition, fishing is noted in the ORVs and this segment of the Merced River is the only segment classified as a Wild Trout Fishery. There are no established visitor facilities on National Park Service lands in this segment, although commercial rafting operations use an existing raft launch at the western edge of the segment and there are many informal parking areas along Highway 140.

The boundary for the El Portal segment of the river in Alternative 1 is based upon the 100-year floodplain or the River Protection Overlay, whichever is greater. The management zoning for the El Portal corridor under Alternative 1 calls for park administrative uses (3C) in existing developed areas north and south of the river, and day use (2C) for undeveloped areas directly adjacent to the river. This narrow boundary would allow for some additional development outside the river corridor boundary. Within the corridor, the areas zoned 3C have the potential to be developed as administrative facilities, but only if these facilities can meet the Merced River Plan criteria for construction within the river corridor (protection of the ORVs). The areas zoned for day use would also allow for some future development of visitor facilities inside the corridor; however, much of the area zoned 2C is within the River Protection Overlay and is unlikely to be developed. Development of additional administrative facilities north of the river would not adversely affect the access to or opportunities for recreation activities, since these potential development areas are not currently used for recreation access. Since there are no existing visitor facilities on National Park Service lands, visitor use within the corridor is limited, and most of the recreation in this area is concentrated in and near the river, the proposed boundary and management zoning would likely have a long-term, local, negligible, adverse effect on access to recreation, the quality of the visitor experience, and the recreation ORVs within this segment.

Visitor capacity within El Portal is currently managed primarily by the parking capacity, the lack of visitor facilities on National Park Service lands, and existing agreements with the Bureau of Land Management on commercial rafting operations. Continuation of the existing user capacity program in the El Portal segment would not change the visitor facilities available on adjacent private lands, the lack of existing visitor facilities on park lands, the amount of parking available, or the access to the spectrum of recreational opportunities included in the recreation ORVs. Therefore, the user capacity program for Alternative 1 would not be expected to result in any short-term or long-term effect on recreation. .

Impacts in Wawona. The recreation ORVs for Wawona relate to the spectrum of river-related recreational activities available, from nature study to photography to hiking. Below Wawona, the recreation ORVs are related to outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities within this area include hiking, fishing, and whitewater kayaking. There is no recreation ORV for the Wawona Impoundment segment.

Visitor capacity in Wawona is not actively managed on a daily basis, but is limited through the availability of overnight lodging and day-visitor parking areas on National Park Service lands. Demand for day-visitor parking currently exceeds the supply on peak summer days, resulting in traffic congestion. Continuation of the current user capacity policies in Wawona would not result in any changes in the short term. If visitation increases in the long term, parking demand could exceed supply on more days. The spectrum of recreational opportunities would be maintained under this alternative, but visitors unable to find parking would not be able to access the recreational opportunities on those peak days. Therefore, the effects of Alternative 1 on access to recreation activities, the quality of the visitor experience, and the recreation ORVs in Wawona would be expected to be a local, long-term, minor, adverse effect.

Summary of Alternative 1 Impacts. Alternative 1 would continue existing user capacity programs for areas within the Merced River corridor. User capacity would continue to be managed through trailhead quotas in wilderness areas, and primarily through facility-based capacities in most other areas. Continuation of these existing user capacity programs would not be expected to result in any changes to recreational access, the quality of the visitor experience, or the recreation ORVs in the short term. In the long term, Alternative 1 could result in local, long-term, minor to moderate, adverse effects on access to recreational activities, the quality of visitor experience, and recreation ORVs in the developed areas of the river corridor, primarily related to traffic congestion and access to parking. The spectrum of recreational opportunities would be maintained under this alternative, but visitors unable to find parking would not be able to access the recreational opportunities on those peak days. Therefore, Alternative 1 would be expected to protect and enhance the recreation ORVs for each segment of the river.

Cumulative Impacts

Cumulative impacts on visitor experience as it relates to recreation are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of this alternative. The projects identified include only those that could affect visitor experience within the river corridor or in the park.

Past Actions. Past actions have had both beneficial and adverse effects on recreation. The El Portal Road Improvements Project, Segments A, B and C, had a short-term, adverse effect on visitor access during construction, including delays and closure of the area to recreational use. The project had long-term beneficial effects related to improved access to recreational opportunities along the river corridor and the El Portal Road, and easier, more dependable, and safer access for recreational vehicles, buses, and other vehicles to Yosemite Valley and other park destinations. Overall, this project provided increased access for visitors to the park and expanded recreational opportunities in the vicinity of the park, resulting in a beneficial effect. The Rehabilitate Yosemite Valley Campground Restrooms project had a beneficial effect by improving the quality of visitor facilities in Yosemite Valley.

Projects implemented under the *Yosemite Valley Plan* could alternately enhance or degrade the quality of the visitor experience in Yosemite Valley. The plan prescribed projects that result in short-term construction effects on access to recreation opportunities, the removal of some existing recreational facilities, and potential limitations on the ability to access Valley destinations by private vehicles. The plan also provides for improvements to the natural environment, reductions in traffic congestion and crowding, and improved visitor facilities in the long term.

Present Actions. Current projects underway include Happy Isles to Vernal Fall Trail Reconstruction, Lower Yosemite Fall Project, Yosemite Motels Expansion, and Yosemite Valley Shuttle Bus Stop Improvements. These projects could result in short-term adverse effects on visitor access to recreation opportunities during construction activities. In the long term, these projects would be expected to have local, beneficial effects on recreation by providing new or improved trails, increasing overnight lodging close to recreation opportunities, and by providing for improved shuttle bus stops for visitors to Yosemite Valley.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into two general categories: (1) projects anticipated to have a net beneficial effect and (2) projects anticipated to have both adverse and beneficial effects.

Examples of future projects that could have a net, beneficial effect on regional visitor experience as it relates to recreation include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Multi-Use Trail to West Yosemite Valley
- Red Peak Pass Trail Rehabilitation
- Wawona Campground Rehabilitation
- Yosemite Lodge Area Redevelopment

These projects would improve existing recreation facilities or develop new recreation facilities, increasing recreation opportunities and the quality of the visitor experience.

Reasonably foreseeable future projects that could have both adverse and beneficial impacts include:

- Update to the *Yosemite Wilderness Management Plan*
- El Portal Road Improvements Project (Segment D)
- Yosemite Village Interim Parking Improvements

These projects have the potential to enhance the quality of the visitor experience in the Wilderness and Yosemite Valley, but could also result in short-term construction effects on access to recreation opportunities and the removal of some existing recreational facilities. For example, the update to the *Yosemite Wilderness Management Plan* could call for additional restrictions on facilities and activities in wilderness areas. This change could be considered a local, long-term, adverse impact to some users, due to the potential restrictions. This action could also result in a beneficial effect for other user groups whose access to the wilderness would not be affected, but who would benefit from a reduction in facilities and activities and their associated impacts in wilderness areas, and improvements in opportunities for solitude and a primitive and unconfined recreational experience. El Portal Road Improvements Project (Segment D) and the Yosemite Village Interim Parking Improvements would improve traffic circulation and parking in Yosemite Valley, improving visitor access to recreation opportunities.

The past, present, and foreseeable future projects would have a long-term, negligible to minor, beneficial impact, because the beneficial impacts associated with increased visitor access and expanded recreational opportunities would be partially offset by the adverse impacts associated with construction activities and the potential removal of specific recreational opportunities.

Overall, Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a local, long-term, negligible, beneficial cumulative impact on recreation, because an increase in visitor access and an expansion of recreational opportunities would be partially offset by the removal of specific recreational opportunities, and increased congestion in developed areas of the river corridor.

Interpretation and Orientation

Analysis

The following discussion provides an overview of the impacts to interpretation and orientation that could occur within each segment of the Merced River corridor under Alternative 1. Effects on interpretation and orientation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Under Alternative 1, user capacity in wilderness areas would continue to be managed under the existing Wilderness Trailhead Quota System, and other relevant park policies. This would not be expected to result in any effect on the existing level of interpretive programs in the Wilderness, such as ranger talks at Little Yosemite Valley Backpackers Campground or ranger-led loop hikes.

Impacts in Yosemite Valley. Under Alternative 1, user capacity in Yosemite Valley would continue to be managed primarily through limitations on overnight and day-use parking facilities, as well as other relevant park policies. Continuation of the existing user capacity program in Yosemite Valley would not be expected to affect the availability and diversity of interpretation, orientation, education, and information services within the corridor.

Impacts in the Gorge. No interpretive programs are currently offered in the Gorge segment. Alternative 1 would have no impact on interpretation and orientation for the gorge.

Impacts in El Portal. Under Alternative 1, the proposed corridor boundary and management zoning reflect the El Portal segment's current and planned use as primarily an administrative center. The proposed corridor boundary, zoning configuration, and user capacity programs would not impact existing interpretation and orientation opportunities in El Portal.

Impacts in Wawona. Under Alternative 1, visitor capacity in Wawona would continue to be controlled primarily through limitations on overnight and day-use parking facilities, as well as other relevant park policies. Continuation of existing user capacity management policies for Wawona would not affect interpretive programs provided at the Wawona Campground Amphitheater, the Pioneer Yosemite History Center in Wawona, or other areas.

Summary of Alternative 1 Impacts. Existing park user capacity management programs for the Merced River corridor are primarily based upon wilderness trailhead quotas and existing facility capacity limits, as well as other management policies as described in Chapter II. Continuation of current user capacity management policies would not be expected to affect access to or the diversity of interpretation and orientation programs offered throughout the corridor.

Cumulative Impacts

Cumulative effects on visitor experience as it relates to orientation and interpretation are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in

combination with potential effects of this alternative. The projects identified below include only those projects that could affect visitor interpretation and orientation within the river corridor or in the park vicinity.

Past Actions. Past park projects that affected visitor interpretation and orientation within the river corridor include the Happy Isles Fen Habitat Restoration and the Merced River Ecological Restoration at Eagle Creek. These projects included interpretative signs and facilities to provide information regarding natural systems in the park, resulting in a beneficial effect on interpretation in the river corridor.

Present Actions. Projects currently underway that provide more opportunities for interpretive and orientation include the Cook's Meadow Ecological Restoration and the Lower Yosemite Fall Project. The Yosemite Valley Bus Stop Improvements would also result in a beneficial effect on visitor experience related to increased orientation and interpretation.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into two general categories: (1) projects anticipated to have a net beneficial effect; and (2) projects anticipated to have both a beneficial and an adverse effect.

Examples of projects that could have a cumulative, beneficial effect on visitor experience as it relates to orientation and interpretation include:

- Yosemite Village Interim Parking Improvements
- Indian Cultural Center

These projects could enhance the quality of the visitor experience by increasing interpretation and orientation facilities and services in Yosemite Valley.

Reasonably foreseeable projects that could have both a beneficial and adverse effect include:

- Update to the *Yosemite Wilderness Management Plan*

This planning effort could result in increased restrictions in wilderness areas that could affect existing facilities or uses, resulting in an adverse effect on users that currently use these facilities. On the other hand, this could result in a beneficial effect for other user groups who would benefit from a reduction in facilities in the wilderness and enhanced opportunities for solitude and self-guided interpretive experiences.

The past, present, and reasonably foreseeable future projects would have a long-term, minor, beneficial impact, because the beneficial impacts associated with an increase in interpretation and orientation programs and services would only be partially offset by the potential for decreased programs in wilderness areas.

Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a local, long-term, minor, beneficial cumulative impact because the availability and diversity of interpretation and orientation programs and services in the corridor would increase.

Visitor Services

Analysis

The following discussion provides an overview of the types of impacts to visitor services that could occur within each segment of the Merced River corridor under the No Action Alternative. Effects on visitor services from the proposed corridor boundary and management zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Under Alternative 1, wilderness areas would continue to be managed under existing wilderness trailhead quotas and other current management policies. Continuation of these policies would not affect the existing low level of visitor services in the Wilderness.

Impacts in Yosemite Valley. Visitor services within the Valley include lodging, food service, and concession-managed activities such as tours and raft rentals. Under Alternative 1, visitor capacity in Yosemite Valley would continue to be managed under existing user capacity policies, including facility limits and specific activity limits. This would not be expected to affect the level of visitor services provided in the Valley, or access to these services. Visitor capacity would continued to be managed primarily through limits on the number of rooms and campsites available for overnight guests, as well as the parking available for day visitors to the Valley. Alternative 1 would not be expected to result in any impacts on the availability of visitor services in the short term. If overnight accommodations and other visitor services are held at existing levels in the future, increased demand for overnight accommodations and other services could result in local, long-term, minor, adverse effects on visitor experience related to access to and availability of visitor services in Yosemite Valley.

Impacts in the Gorge. No visitor services are currently offered in the Gorge segment of the corridor, and continuation of existing user capacity management policies under Alternative 1 would have no effect on visitor services.

Impacts in El Portal. The proposed El Portal segment boundary and management zoning, which focuses on the area's designation as an administrative and operations center, would not be expected to result in any change in the limited visitor services available in El Portal. Visitor services in El Portal are largely run by private businesses (e.g., lodging, restaurants, etc.) on private lands that are not managed under park management policies. The proposed river boundary, zoning, and continuation of existing user capacity management policies under Alternative 1 would not affect visitor services in this area.

Impacts in Wawona. Visitor services in Wawona include lodging, food service, and activities such as horseback riding, golfing, and interpretative programs at the Pioneer Yosemite History Center. Under Alternative 1, the continuation of existing user capacity management policies in Wawona would not affect the level of visitor services provided in the Wawona segments, or access to these services in the short term. If overnight accommodations and other visitor services are held at existing levels in the future, increased demand for overnight accommodations and other services could result in local, long-term, minor, adverse effects on visitor experience related to access to and availability of visitor services in Wawona.

Summary of Alternative 1 Impacts. Continuation of existing user capacity program policies within the Merced River corridor would not be expected to result in any effects on access to or the availability of visitor services in the short term. If overnight accommodations and other visitor

services are held at existing levels in the future, increased demand for overnight accommodations and other services could result in local, long-term, minor, adverse effects on visitor experience related to access to and availability of visitor services in Yosemite Valley and Wawona.

Cumulative Impacts

Cumulative effects on visitor experience as it relates to visitor services are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of Alternative 1. The projects identified below include only those projects that could affect visitor experience within the river corridor or in the park vicinity.

Past Actions. The El Portal Road Improvements Project, Segments A, B, and C improved transportation to and from the park, which had a beneficial effect on visitor services by providing increased access for visitors staying outside the park. The Rehabilitate Yosemite Valley Campground Restrooms also had a beneficial effect on visitor services by improving the quality of existing visitor facilities.

Implementation of projects prescribed in the *Yosemite Valley Plan* will have a mixed effect on visitor services. The plan proposes restoration of degraded areas and a reduction of development within the Merced River ecosystem while enhancing the quality of the visitor experience in Yosemite Valley. Reducing automobile congestion, limiting crowding, and expanding orientation and interpretation services may improve visitor services. The plan does, however, prescribe an overall reduction in overnight accommodations in Yosemite Valley, which would have an adverse effect on the provision of visitor services.

Present Actions. Projects currently underway that have a beneficial effect on visitor services include the Yosemite Motels Expansion, the Yosemite Valley Shuttle Bus Stop Improvements, and the Lower Yosemite Fall Project. These projects provide for additional accommodations close to the park and improve visitor facilities in the Yosemite Valley area.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into two general categories: (1) projects anticipated to have a net beneficial effect; and (2) projects anticipated to have a net adverse effect.

Examples of projects that could have a cumulative beneficial effect on visitor services include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Wawona Campground Rehabilitation
- Yosemite Lodge Area Redevelopment
- Yosemite Village Interim Parking Improvements

These projects are expected to improve and expand campgrounds and campground facilities, improve overnight accommodations and other services at the Yosemite Lodge, and improve parking and traffic circulation for visitors to Yosemite Valley.

A reasonably foreseeable project that could have a net adverse effect on visitor services is the Update to the *Yosemite Wilderness Management Plan*, which could call for reductions in the level of facilities and activities in wilderness areas. This could change the level of overnight accommodations in wilderness areas, which could be considered an adverse effect on visitor services.

These cumulative projects would have a long-term, minor to moderate, adverse impact on visitor services due to the overall reduction of overnight accommodations in Yosemite Valley and the potential reduction in wilderness areas. These adverse impacts would be partially offset by improving parking and traffic circulation in Yosemite Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse cumulative impact on visitor services because of the potential reduction of overnight accommodations in Yosemite Valley and potential wilderness areas, and the potential for future increased demand for overnight accommodations. This adverse impact would be partially offset by improving parking and traffic circulation within Yosemite Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Wilderness Experience

Analysis

The following discussion provides an overview of the types of impacts to the wilderness experience that could occur within the Merced River corridor under Alternative 1.

Under Alternative 1, the park would continue to manage use of the Wilderness primarily through the existing trailhead quota system, as well as other relevant management policies. Alternative 1 would not result in any change to wilderness access or the opportunities for solitude and primitive recreation.

Summary of Alternative 1 Impacts. There would be no change to the wilderness experience under Alternative 1.

Cumulative Impacts

Cumulative effects on the wilderness experience are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with the effects of this alternative. The projects identified below include only those projects that could affect the wilderness experience within the river corridor or in the park vicinity.

Past Actions. Past restoration and rehabilitation projects in wilderness areas, such as trail maintenance and illegal campsite restoration, improved the wilderness experience by restoring and improving trail conditions and restoring meadow environments near trails. The recently completed *Fire Management Plan* (NPS 2004) is expected to result in local, long-term, beneficial effects on the wilderness experience by improving natural conditions.

Present Actions. The Wilderness Trailhead Quota System continues to limit and/or disperse use based on trailhead access, and thus provides the beneficial impact of improved experience of natural values due to resource protection.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into two general categories: (1) projects anticipated to have a net beneficial effect; and (2) projects anticipated to have both a beneficial and adverse effect.

The Red Peak Pass Trail Rehabilitation could have a net beneficial effect on visitor experience by improving ecosystem health in wilderness areas within the park, restoring meadows, and

improving trails. Any improvement to the wilderness ecosystem is considered to be a long-term, beneficial impact.

The update to the *Yosemite Wilderness Management Plan* is expected to have both beneficial and adverse effects. This update could call for a reduction in existing facilities or activities in wilderness areas. This change could reduce overnight accommodations in wilderness areas, resulting in an adverse effect to some visitors. On the other hand, this action might also result in a beneficial effect for other user groups whose access to the wilderness would not be affected, but who would benefit from a reduction in facilities and activities in the wilderness. These individuals could benefit from improvements in scenic and natural quiet qualities, opportunities for solitude, and an overall primitive recreational experience.

These cumulative projects would have a long-term, minor, beneficial impact on the wilderness experience, because the wilderness ecosystem would be improved and would only be partially offset by the potential, long-term, adverse impacts related to additional restrictions on activities and facilities in wilderness areas.

Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor, beneficial cumulative impact to the wilderness experience, because the beneficial improvements to the wilderness ecosystem would offset the potential reductions in wilderness facilities and activities.

Social Resources

Land Use

Analysis

The following discussion provides an overview of the types of impacts to land use that could occur within each segment of the Merced River corridor under the No Action Alternative. The analysis for the El Portal segment also describes the types of impacts to land use that could occur based on implementation of the narrow river corridor boundary and management zoning proposed for El Portal under this alternative.

The park establishes management zoning to classify park areas and prescribe future desired resource conditions, visitor activities and use levels, and appropriate facilities. Management zones in the river corridor were established in the Merced River Plan. These management zones place an emphasis on integrating protection and enhancement of the natural and cultural resources identified as ORVs with the protection and enhancement of the spectrum of recreational experiences identified in the recreation ORVs. Management zoning sets the goals for each area; the park implements user capacity management measures to help achieve the goals set out in the management zoning prescriptions.

Impacts to Wilderness. User capacity measures implemented under Alternative 1, including the existing wilderness trailhead quotas, would be consistent with the management zoning developed in the Merced River Plan and with the existing land uses in the Wilderness segments of the river corridor.

Impacts to Yosemite Valley. User capacity measures implemented under Alternative 1, including facility and specific activity limits, would be consistent with the management zoning developed through the Merced River Plan and with existing land uses in the Yosemite Valley segment.

Impacts to the Gorge. User capacity measures implemented under Alternative 1, including facility and specific activity limits, would be consistent with the management zoning developed through the Merced River Plan and with existing land uses in the Gorge segment.

Impacts in El Portal. Under Alternative 1, the river corridor boundary in the El Portal segment would include 193 acres, of which 137 acres would be zoned for day use (2C) and the other 56 acres would be zoned for administrative uses (3C). The 3C zoning designation would allow for development of some additional park administrative facilities and 2C zoning would allow for development of some day use facilities. Development within the corridor would be limited to facilities that meet the requirements of the Wild and Scenic Rivers Act, including the protection and enhancement of the ORVs. The potential residential and administrative types of development that would likely occur in the future would be consistent with existing development patterns. Areas outside the corridor boundary could also be developed, to the extent that any ORVs located outside the river corridor are protected. The potential for increased development in the El Portal segment, both inside and outside the corridor boundary, would result in more residential and administrative development and less open space. Development would likely increase, resulting in a local, long-term, minor to moderate, adverse effect on land use in El Portal.

User capacity measures implemented under Alternative 1, including facility and specific activity limits, would be consistent with the management zoning established for the El Portal segment under this alternative.

Impacts to Wawona. User capacity measures implemented under Alternative 1, including facility and specific activity limits, would be consistent with the management zoning developed through the Merced River Plan and with existing land uses in Wawona.

Summary of Alternative 1 Impacts. Under Alternative 1, the park would continue to implement existing user capacity policies, including wilderness trailhead quotas, facility limits, and specific activity limits. Since these existing user capacity policies are designed to help the park achieve the goals defined in the management zoning prescriptions, implementation of Alternative 1 would be consistent with management zoning in the river corridor. The proposed river corridor boundary and management zoning in El Portal could result in local, long-term, minor to moderate, adverse effects on land use due to the potential for increased residential and administrative development and a decrease in open space in the El Portal area.

Cumulative Impacts

Cumulative effects to land use are based on an analysis of past, present, and reasonably foreseeable future actions in combination with the potential effects of this alternative. The projects identified below include only those projects that could affect land use within the river corridor and in the immediate vicinity of Yosemite National Park.

Past Actions. In general, land uses in the Merced River corridor have been determined by past decisions on the development, relocation, and removal of specific facilities. Development within the Merced River corridor has occurred since Euro-American occupation.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint *South Fork and Merced Wild and Scenic River Implementation Plan* for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is also a general management plan with many prescriptive goals and few specific actions. The plan endeavors to

limit or end consumptive uses such as grazing within the river corridor and calls for the formalization of camping and launch facilities for nonmotorized watercraft. By eliminating impacts where feasible (grazing does not currently occur within the river corridor), concentrating impacts in areas able to withstand visitor use, and providing facilities that mitigate adverse effects associated with visitor use (e.g., restrooms), implementation of these actions has a beneficial effect.

The *Yosemite Valley Plan* calls for relocation of facilities out of Yosemite Valley to El Portal and Wawona and for redevelopment of areas within Yosemite Valley. All of the changes proposed are consistent with the types of development already in the river corridor segments and with the land use zoning established in the Merced River Plan. The changes proposed in this plan would result in an adverse effect on existing land use in El Portal and Wawona as open space areas are developed for residential uses and administrative uses. The intensity of the effect would depend upon the extent to which the proposed development in the plan is implemented.

Present Actions. The Mariposa County General Plan Update would evaluate and address countywide land use issues and is expected to benefit land use throughout the county. The Yosemite Motels Expansion project, a privately sponsored project, would be expected to have local, long-term, adverse effects on land use in El Portal associated with the increased intensity of development adjacent to El Portal.

Reasonably Foreseeable Future Actions. The El Portal Concept Plan will evaluate development opportunities and constraints in El Portal and evaluate the potential for relocation of employee housing and other park administrative facilities from the Valley to El Portal. The impact intensity of this project would depend upon the intensity of development proposed and the extent to which the Concept Plan addresses compatibility with existing land uses in El Portal. The long-term impacts on land use could be either adverse or beneficial.

Overall, the cumulative projects would be expected to have local, long-term, minor to moderate, adverse impacts on land use due to the potential for additional development of residential and administrative uses and a decrease in open space in the El Portal area and Wawona areas. The impacts should be offset somewhat by the planning efforts underway on countywide planning and the El Portal Concept Plan.

The cumulative effects of Alternative 1 and the cumulative projects would result in local, long-term, minor to moderate, adverse effects on land use within the river corridor.

Transportation

Analysis

The following discussion provides an overview of the types of transportation impacts associated with Alternative 1, the No Action Alternative. Because transportation services and facilities are not provided in Yosemite wilderness areas, this discussion does not address impacts in the Wilderness segments of the river corridor.

In general, transportation conditions would remain unchanged under Alternative 1, although traffic levels would be expected to increase over time. Traffic levels during peak periods would continue to adversely affect transportation due to congestion on roads and in parking areas. Visitor parking would occasionally spill into natural areas along roadsides, resulting in conflicts

among parked and moving vehicles. Pedestrian traffic from roadside parking to activity areas would conflict with moving traffic. The park would continue to occasionally implement restricted access programs in response to traffic and safety conditions. If visitation grows in the future, these impacts would become more frequent and more intense.

Impacts in Yosemite Valley. At present, visitor travel to Yosemite Valley is not actively controlled on a daily basis, but it is regulated through facility capacities. For the transportation system, capacities are primarily determined by the parking supply. Several traffic bottlenecks, where high volumes of pedestrians cross major roadways, affect transportation conditions during peak travel periods. During these peak periods, park staff direct visitors to available parking and manage vehicle and pedestrian traffic at several congested intersections. Park employees direct visitors to roadside parking areas when parking lots are full. On the busiest days the roadside parking can spill into natural areas. Visitors may experience delays in accessing recreation sites due to the time spent searching for parking. High visitation on weekends in the peak season sometimes results in significant traffic congestion within Yosemite Valley. This congestion primarily affects visitors and other travelers as they exit the Valley via Northside Drive. A line of waiting vehicles typically backs up along Northside Drive from the intersection at Yosemite Lodge. The line can reach to Yosemite Village and beyond on the busiest afternoons. The congestion from private vehicle traffic delays the operation of the Yosemite Valley Shuttle Bus system, thus reducing its effective capacity and causing overcrowding of the buses during peak times. Park management implements restricted access to the Valley when it determines that local traffic congestion is creating unacceptable human safety, visitor experience, and resource impacts. Restricted access results in the diversion of visitor and other traffic away from roads in Yosemite Valley and onto other roads in the park.

Under Alternative 1, for the short term there would continue to be negligible to minor, adverse impacts on the transportation system during peak periods. In the long term, these adverse effects related to parking and congestion could increase as a result of growth in visitation, primarily extending into additional time periods and on additional days. If they become more frequent and/or more widespread in time, the impacts could increase to local, minor to moderate, and adverse.

Impacts in the Gorge. Current access to the Merced River gorge is limited by available roadside parking along the shoulders of Highway 140 and at two off-road parking areas. Parking availability effectively limits the capacity for visitors who can access this segment of the Merced River.

Under Alternative 1, user capacity would continue to be limited through the existing parking supply in the Gorge segment. Available parking fills relatively infrequently in this area, and additional use could occur during off-peak times. When restricted access is implemented for Yosemite Valley, the parking spaces in the Gorge are likely to become more congested as visitor use is displaced away from the Valley. The existing parking supply in the Gorge would limit the degree to which displaced users from the Valley could be accommodated. If park visitation increases, parking areas in the Gorge could be filled more regularly. If demand is increased by traffic diversion from the Valley, parking may begin to spill onto the shoulders of the road near the current spaces. This could create safety issues for the vehicles parking along Highway 140 in the Gorge and could cause conflicts with through traffic on Highway 140.

Under Alternative 1, for the short term there would be negligible impacts on the transportation system of the Gorge. In the long- term, there could be local, negligible to minor, adverse effects related to parking availability and traffic safety conflicts during peak periods.

Impacts in El Portal. There are no established visitor facilities on National Park Service land in the El Portal segment of the Merced River. Transportation access to river activities is from Highway 140 and Foresta Road via informal parking areas along the shoulders of both roads. There is also a small gravel parking lot for the existing Red Bud commercial raft launch site at the western edge of the El Portal segment. The boundary and management zoning under Alternative 1 would maintain a narrow boundary in El Portal, which would allow for future development of administrative and visitor use facilities in areas outside the corridor. Increased development of employee housing or visitor facilities could result in increased traffic in the areas and would likely result in a local, long-term, minor, adverse effect on transportation conditions in this segment.

Under Alternative 1, user capacity would continue to be limited through the existing parking supply in El Portal. Available parking fills relatively infrequently in this area, and additional use could occur during off-peak times. The existing supply of parking in El Portal would be expected to limit future use of this area to the current peak level of use. Growth in visitor use (primarily rafting and fishing) in the area could result in the parking areas filling more frequently. If parking capacity were exceeded, parking would begin to spill onto the shoulders of the roads near the current spaces. This could create safety issues for the vehicles parking along roadways and could cause conflicts with through traffic.

Overall, Alternative 1 would be expected to result in a local, long-term, negligible to minor, adverse effect on the transportation system in El Portal.

Impacts in Wawona. At present, visitor traffic in the Wawona segments is not actively managed on a daily basis, but is regulated through the capacity of the overnight lodging and parking areas. Parking is actively managed during limited peak periods. The active management of the visitor parking lot at the Mariposa Grove directly affects transportation conditions in Wawona. When the Mariposa Grove lot fills, visitors' vehicles are diverted to other parking areas and visitors travel to the grove via shuttle. Much of the displaced parking occurs in Wawona, primarily near the Wawona Store. The displaced parking from Mariposa Grove frequently causes the parking lot at the store to fill. On many days visitors park vehicles along the road shoulders of Highway 41 and Forest Drive. Some visitors who want to use facilities at Wawona, including the store and the Pioneer Yosemite History Center, may be displaced by the overflow parking conditions.

Under Alternative 1, visitor transportation in the Wawona segment would continue to be controlled by the existing parking supply in the Wawona area. During peak periods when restricted access is implemented for Mariposa Grove, the parking spaces in Wawona could become more congested. If park visitation increases, parking areas in Wawona could be filled more frequently. If sufficient demand is created by traffic diversion from Mariposa Grove or the Valley, parking may begin to spill into additional roadside areas. This could create safety issues for the vehicles parking along Highway 41 and Forest Drive and cause conflicts with through traffic on Highway 41.

Under Alternative 1, for the short term there would be negligible impacts on the transportation system of the Wawona area. In the long term, there could be local, negligible to minor, adverse effects related to access and traffic congestion during peak periods.

Summary of Alternative 1 Impacts. Alternative 1 would continue existing user capacity programs for areas within the Merced Wild and Scenic River corridor. For the short term, continuation of these existing user capacity programs would be expected to result in local, short-term, negligible to minor, adverse effects on the transportation systems. In the long term, Alternative 1 could result in local, negligible to minor, adverse effects on the transportation system.

Cumulative Impacts

Cumulative impacts on transportation are based on analysis of past, present and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of Alternative 1.

Past Actions. Past actions that have affected transportation include the El Portal Road Improvements Project (Segments A, B, and C) and the development of the *Yosemite Valley Plan*. The El Portal Road Improvements Project has provided a minor, long-term, beneficial impact to transportation as it has improved road conditions and safety concerns between the Yosemite National Park boundary and the intersection of the El Portal and Big Oak Flat Roads. The *Yosemite Valley Plan* would implement major changes in transportation to and within Yosemite Valley. The number of private vehicle trips by visitors to and within the Valley would be reduced significantly. Implementation of projects under the *Yosemite Valley Plan* would result in local, long-term, moderate to major, beneficial transportation impacts.

Present Actions. Current projects underway include the South Fork Bridge Replacement, Yosemite Valley Shuttle Bus Procurement, and Yosemite Valley Shuttle Bus Stop Improvements. These current projects would likely result in long- term, minor, beneficial impacts on transportation.

Reasonably Foreseeable Future Actions. The reasonably foreseeable future actions proposed in the region are all expected to have beneficial impacts on the transportation system or the demand for transportation services in the river corridor or the park. These projects include Yosemite Village Interim Parking Improvements, El Portal Concept Plan, El Portal Road Improvements Project (Segment D), Northside-Southside Drive Repaving, and the Yosemite Lodge Area Redevelopment. The Northside-Southside Drive Repaving would provide long- term, minor, beneficial, localized improvements to existing transportation problems, primarily in the areas of safety and efficiency of the transportation system. The Yosemite Village Interim Parking Improvements project would improve some existing traffic congestion points in the Valley and would facilitate the management of parking spaces for day visitors, resulting in minor, beneficial transportation benefits. The Yosemite Lodge Area Redevelopment project would remove the single greatest traffic congestion point in Yosemite Valley, which when combined with Alternative 1 could result in minor to moderate, long- term, beneficial transportation impacts. The El Portal Concept Plan, if successfully implemented, would relocate employee housing and work sites away from Yosemite Valley. This would reduce travel within the Valley by a small amount and result in negligible transportation benefits.

Scenic Resources

Analysis

The following discussion provides an overview of the types of impacts to scenic resources that could occur within each segment of the Merced River corridor under Alternative 1.

Impacts in the Wilderness. Scenic ORVs of the Wilderness segments of the river corridor include views from the Merced River and its banks of the exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges. Park management practices and use levels would continue to be based on the Wilderness Act and federal and Yosemite National Park wilderness policies and guidelines, such as the trailhead quota system (which limits and disperses visitor use) and WIMS. Because of the remote location of the Wilderness segments of the river and the low levels of use, continuation of current management direction under Alternative 1 is not expected to affect scenic ORVs.

Impacts in Yosemite Valley. Scenic ORVs within Yosemite Valley include views from the Merced River and its banks of waterfalls and water features (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, and Bridalveil Falls and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rocks, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil). There is a scenic interface of river, rock, meadow, and forest throughout the Valley segment.

Under Alternative 1, the National Park Service would continue to implement existing user capacity policies. These policies are consistent with the management zoning prescribed in the Merced River Plan and are not expected to adversely affect scenic resources.

Many of scenic resources are insensitive to user-related impacts and would be more directly affected by development within the river corridor, which could result in a loss of vegetative cover and an increase in structures and facilities that could obstruct scenic views.

Alternative 1 would protect and enhance the scenic ORVs through the application of a range of management zones.

Areas zoned Open Space (and Undeveloped Open Space) (2A), Discovery (2B), and Day Use (2C) are designed to enhance scenic ORVs by placing restrictions on new development and encouraging restoration activities. Measures taken to enhance ORVs include closure or restoration of riparian areas and site hardening, such as construction of boardwalks or picnic facilities. New facilities in these management zones are designed in accordance with the Yosemite Valley design guidelines (NPS 2004c), which guides facility design to promote scenic values. Continuing the current method of managing these zones would have a local, long-term, minor to moderate, beneficial impact on scenic resources and the scenic ORVs.

To further protect and enhance the ORVs in other parts of the corridor, areas zoned Camping (3A), Visitor Base and Lodging (3B), and Park Operations and Administration (3C) direct high-impact activities and facilities to areas better able to withstand heavy use or to already developed locations. Potential projects in these developed zones that could affect scenic resources include additional development, vegetation removal, and increased intensity of use. Although new design would follow the park's design guidelines, increased development density, surface hardening, vegetation removal, and increased visitor use (and consequent decrease in opportunities for solitude) would have a local, long-term, minor, adverse impact on scenic resources.

Impacts in the Gorge. Scenic ORVs of the Gorge segment include views from the Merced River and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack

Creek Fall, the Rostrum, and Elephant Rock. The extensive application of 2A+, 2A, and 2B zoning and the quarter-mile boundary over a majority of the Gorge segment would protect and enhance these ORVs. Management zoning in the Gorge segment would substantially limit areas in which new development could occur and would maintain the natural appearance of the gorge, thus ensuring the protection of the scenic ORVs.

Under Alternative 1, the National Park Service would continue to implement existing user capacity policies. These policies are consistent with the management zoning prescribed in the Merced River Plan and are not expected to affect scenic resources.

Impacts in El Portal. Scenic resources in the El Portal segment of the river corridor consist of views of the geologic transition between granite and metasedimentary bedrock along the canyon walls and distinct views of Chinquapin Fall.

Portions of El Portal would be zoned 3C (e.g., the Trailer Village/Abbieville, Old El Portal), which could allow additional development. Since the river corridor boundary is narrow under Alternative 1, there is more potential for development in El Portal in those areas outside the corridor boundary. Such development could change the quality of the visual landscape within the Merced River corridor and could have local, long-term, minor, adverse effects on the scenic resources in El Portal. Implementing mitigation measures described in Appendix B could mitigate adverse effects. The adverse impact on scenic resources in El Portal could be further offset by the potential restoration of the Sand Pit, resulting in a negligible, adverse impact.

Impacts in Wawona. Scenic ORVs of the Wawona segments of the river corridor include views from the Merced River and its banks of large pothole pools within slickrock cascades, old-growth forest, meadows, Wawona Dome, and continual whitewater cascades in the deep and narrow river canyon below Wawona.

Under Alternative 1, park management would continue to implement existing user capacity policies. These policies would be consistent with the management zoning prescribed in the Merced River Plan and would not be expected to adversely affect scenic resources.

Summary of Alternative 1 Impacts. Compliance with existing park policies, including the Yosemite Valley design guidelines, would help ensure that the scenic ORVs in the Wilderness, Yosemite Valley, Gorge, and Wawona segments are protected and enhanced. Application of existing management zoning and other user capacity policies would have a local, long-term, minor, beneficial impact on scenic resources and the scenic ORVs in Yosemite Valley and Wawona due to opportunities to restore degraded areas of the Merced River corridor and remove developments inconsistent with the River Protection Overlay. This beneficial impact would be partially offset by management zoning that would allow for some new development. In the El Portal segment, Alternative 1 would have a minor, adverse impact on scenic resources due to the potential for new development in El Portal. This adverse impact could be partially offset by the restoration of the Sand Pit.

Cumulative Impacts

Cumulative effects on scenic resources are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. The projects identified below include only those projects that could affect scenic resources within the Merced River corridor or in the park vicinity.

Past Actions. Scenic resources have been affected by numerous past actions since the inception of the park. Primary among these is the alteration of natural communities caused by Euro-American settlers who lived in the park. For example, attempts to establish agriculture and the development of tourism resulted in the drying out of the Valley by breaching the El Capitan moraine and suppressing naturally occurring fires, which affected vegetation patterns along the Merced River. Broad-leafed trees along the riverbanks were replaced by the comparatively dense stands of conifers that exist today. These activities have had a local, long-term, moderate, adverse effect on scenic resources, because the conifers now block views of important scenic resources that were visible before the vegetation patterns were changed.

Recent park projects that have benefited scenic resources within the river corridor include the *Fire Management Plan*, which addresses improvements to ecosystem health through integration of fire management principles and other vegetation management principles, and the Cascades Diversion Dam Removal, which restored the natural flow of the Merced River at the top of the Gorge segment, thereby improving scenic resources.

Projects implemented under the *Yosemite Valley Plan* could include improvements to the natural setting through restoration and improved site design. Adverse effects on scenic resources could occur in areas of new development.

Present Actions. Current projects that adversely affect scenic resources due to increased development and obstruction of views include the Yosemite Motels Expansion in El Portal and the Curry Village Employee Housing in Yosemite Valley.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have both adverse and beneficial effects; and (3) projects anticipated to have an adverse effect.

Projects that could have a net beneficial cumulative effect on scenic resources include those that improve the built environment to better address significant views. Examples of projects that could have a beneficial cumulative, effect on scenic resources include:

- Yosemite Lodge Area Redevelopment
- Visitor Use and Floodplain Restoration Program
- El Portal Old Wastewater Treatment Facility Removal

Projects that prescribe increased development—especially development in previously undeveloped areas—would have a long-term, moderate, adverse impact to scenic resources. Examples of projects that could have both adverse and beneficial effects on scenic resources include:

- El Portal Concept Plan
- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Update to the *Yosemite Wilderness Management Plan*

All four of these plans could improve the natural setting through restoration and improved site design. Adverse effects on scenic resources could occur in areas of new development.

Examples of projects that could have a adverse cumulative effect on scenic resources include:

- Environmental Education Campus Development Program
- Indian Cultural Center
- Yosemite Village Interim Parking Improvements

The local, long-term, adverse effects of these projects would be related to the potential introduction of new structures and infrastructure that would intrude into views of important scenic resources within or viewable from the Merced River corridor. For example, the Yosemite Village Interim Parking Improvements could result in a decrease in vegetation, an increase in the glare caused by parked vehicles, and an increase in hardscape. The effects of this development would be visible from important Valley-rim viewpoints such as Glacier Point. The Indian Cultural Center would introduce new structures into a currently undeveloped part of the Valley and would adversely affect foreground views.

These past, present, and foreseeable future projects would have a long-term, minor, adverse impact because the beneficial effects associated with restoration, vegetation management, and vehicle reduction would be slightly outweighed by the potential for increased development and a decreased ability to view and experience scenic resources.

Overall, these cumulative actions in combination with Alternative 1 could have a net long-term, minor, adverse impact on scenic resources and the scenic ORVs within the Merced River corridor.

Impairment

Because impacts associated with Alternative 1 are expected to be beneficial or only negligibly adverse, this alternative would not be expected to impair the park's scenic resources for future generations.

Socioeconomics

Social Environment

Analysis

Under Alternative 1, park management would continue to manage user capacity based on current policies, including wilderness trailhead quotas, facility limits, and limits on specific activities. The river corridor for the El Portal segment would be the same as identified in the Merced River Plan.

Since the No Action Alternative would not change existing policies regarding facilities and operations within the river corridor segments, there would be no substantive changes to the social environments within the river corridor. Existing housing, community amenities, and other facilities could continue to be used as they are currently. Commute times to and from the park from various areas would likely increase in the future, because overall visitation to the park would result in increased traffic on roads used for commuting.

Impacts in Wilderness Areas. There are limited facilities in park wilderness areas, and few employees are stationed in these areas. User capacity would continue to be managed under the existing trailhead quotas, and visitor and employee levels would be expected to remain at current levels. The No Action Alternative is not expected to affect the social environment in Wilderness segments of the river corridor.

Impacts in Yosemite Valley. The No Action Alternative would not require changes to existing employee housing, available amenities, or other facilities in the Valley. Park planning efforts and future development in the Valley would continue to be based on the *General Management Plan* and on existing utility capacities within the Valley. Since the *General Management Plan* calls for reduced administrative facilities in the Valley, employee housing in the Valley would likely decrease in the future. Commute times to the Valley from other areas are not expected to change in the short term, but could increase in the long term with increases in park visitation and traffic levels on roads leading to the park. Overall, effects from Alternative 1 on the social environment would likely be local, long-term, minor, and beneficial due to decreased crowding in Yosemite Valley. Effects on employees relocated out of the Valley would be local, minor to moderate, and adverse due to increased commutes over time. The intensity of the adverse effect would depend upon the level of housing increases or decreases and where this employee housing was replaced.

Impacts in El Portal. Continuation of user capacity management policies under the No Action Alternative would not require changes to employee housing in El Portal, amenities, or other facilities located there. Park planning efforts and future development in El Portal would continue to be based on the *General Management Plan* and on existing utility capacities. Since the *General Management Plan* calls for increased employee housing in El Portal, it is likely that the level of employee housing would increase in the future, while remaining within utility capacities.

The river corridor boundary and management zoning in El Portal under Alternative 1 is consistent with existing uses of the corridor and would not expected to require changes to housing, community amenities, or facilities. The narrow corridor boundary would allow for future development of new or expanded park administrative facilities outside the corridor in the El Portal area. Future increased development within the El Portal Administrative Site could result in local, long-term, minor to moderate, adverse effects on community amenities due to the potential for increased administrative staff and/or employee housing in the area. The intensity of the impacts would depend on the level of development within the El Portal Administrative Site.

Impacts in Wawona. The No Action Alternative would not change how user capacity is currently managed in Wawona. Therefore, there would be no changes to housing, community amenities, or other facilities. Park planning efforts and future development in Wawona would continue to be based on the *General Management Plan* and on existing utility capacities. Park staffing and employee housing in Wawona could increase or decrease in the future, within the limits of the utility capacities. The *General Management Plan* calls for increased employee housing in Wawona; therefore, employee housing would likely increase in the future, within the limits of the utility capacities. Commute times to Wawona from other areas would not be expected to change in the short term, but could increase in the long term with increases in park visitation and traffic levels on roads leading to the park. Overall effects from Alternative 1 on the social environment are expected to be local, long-term, minor to moderate, and adverse due to changes in housing levels and increased commutes over time. The intensity of the adverse effect would depend upon the level of housing increases or decreases and where this employee housing was replaced.

Summary of Alternative 1 Impacts. The continuation of user capacity policies within the river corridor would not require substantive changes to existing housing and facilities in the local communities within the corridor. Housing and staffing in these areas could increase or decrease in the future, within the limits of the existing utility capacities. Commute times would not be expected to change in the short term, but could increase in the long term with increases in park

visitation and traffic levels on roads leading to the park. Overall effects from Alternative 1 on the social environment are expected to be local, long term, minor to moderate, and adverse due to potential changes in housing levels and increased commutes over time. The intensity of the adverse effect would depend upon the level of housing increases or decreases and where this employee housing was replaced.

Cumulative Impacts

This discussion of the cumulative effects on the social environment is based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of this alternative.

Past Actions. The *Yosemite Valley Plan*, completed in 2000, provides guidance for the relocation of park and concessioner employee housing and other administrative facilities from the Valley to El Portal and Wawona, as called for in the *General Management Plan*. Implementation of this plan would result in mixed effects on the social environments in the river corridor. The social environment in Yosemite Valley would experience local, long-term, beneficial effects associated with reduced crowding, more secure housing conditions, and increased privacy. The social environment of the workforce would also experience local, long-term, adverse effects associated with increases in commuting time, changes of housing locale, and decreases in social amenities near housing sites. The social environment in El Portal and Wawona would experience local, long-term, adverse effects due to the potentially substantial increases in housing in these communities, although it is expected that the population growth would be gradual. Even though the *Yosemite Valley Plan* calls for the placement of community amenities in El Portal, there could be strains on the limited community amenities of El Portal and Wawona resulting from the population growth.

Present Actions. Current projects include projects that benefit the social environment and projects that adversely affect the social environment in the river corridor.

The Mariposa County General Plan Update and the Curry Village Employee Housing project are expected to benefit the social environment in the corridor. The Curry Village Employee Housing project provides for new, efficiently designed employee housing to replace crowded temporary housing areas that were developed after the January 1997 flood. The Mariposa County General Plan Update will evaluate and address countywide land-use issues and is expected to benefit the social environment throughout the county.

The Yosemite Motels Expansion project is expected to have short- and long-term, adverse effects on the social environment in El Portal. This project could result in short-term construction effects and in longer term effects related to increased development and traffic congestion in the El Portal area.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region are separated below into three general categories: (1) projects anticipated to have a net beneficial effect; (2) projects anticipated to have a net adverse effect; and (3) projects anticipated to have a mixed effect.

A reasonably foreseeable future project that could have a cumulative, beneficial effect on the social environment is:

- El Portal Concept Plan

The El Portal Concept Plan will evaluate development opportunities and constraints in El Portal and evaluate the potential for relocation of employee housing and other park administrative facilities from the Valley to El Portal. This planning effort would be expected to develop a design plan that protects the ORVs in the El Portal segment and provides for needed amenities that will benefit the social environment in El Portal.

Together, the past, present and reasonably foreseeable future projects would have a local, long-term, minor to moderate, adverse effect on the social environments within the corridor due to increased housing and population pressures in El Portal and Wawona and increased commutes for employees relocated from the Valley. The impact intensity of any planning projects would depend on the extent to which the plan's recommendations are implemented.

Alternative 1 and the cumulative projects would have a local, long-term, minor to moderate, cumulative, adverse effect on the social environments within the corridor due to increases in housing and population pressures in El Portal and Wawona. The impact intensity would depend on the extent to which the cumulative projects' recommendations are implemented.

Visitor Populations

Analysis

Alternative 1 would provide for the continued implementation of existing park policies regarding visitor use within the river corridor. These include wilderness trailhead quotas, facility limits, and limits on specific activities. These policies would allow for continued growth in visitor populations to the point where visitation is constrained by existing facilities (i.e., lodging and parking). In the long-term, Alternative 1 could result in higher visitation levels in the future resulting in a need for increased use of restricted access policies. The level of overnight accommodations for visitors in the park would remain consistent with the overall developed area capacities identified in the *General Management Plan* and would be constrained by existing utility capacities. Under Alternative 1, the composition of the Yosemite visitor population (the ratio of park overnighters to day visitors) is not expected to change from existing conditions.

Summary of Alternative 1 Impacts. Alternative 1 is not expected to result in any substantive changes in visitor populations in the park. Long-term increases in visitor levels would likely result in increased use of restricted access policies during peak periods.

Cumulative Impacts

This discussion of cumulative impacts on visitor populations is based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of this alternative.

Past Actions. The *Yosemite Valley Plan*, completed in 2000, provides for a reduction in overnight accommodations in Yosemite Valley, which would result in a local, long-term, adverse impact on visitors due to decreased opportunities to lodge and camp in the Valley.

Present Actions. The Yosemite Motels Expansion project provides for additional overnight accommodations close to the park. This project is expected to result in a local, long-term, beneficial effect on visitor populations.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future projects that could have a cumulative, beneficial effect on visitor populations include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Yosemite Lodge Area Redevelopment

These projects would result in the development of some new overnight accommodations in the Curry Village and Yosemite Lodge areas. These projects would have a local, long-term, beneficial impact on visitor populations by increasing overnight accommodations in the park.

The cumulative projects would have a regional, long-term, negligible to minor, adverse impact on visitor populations due to the overall reduction in overnight accommodations in Yosemite Valley. This adverse effect would be offset somewhat by additional overnight accommodations being constructed outside the park.

Overall, Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a local, long-term, negligible to minor, adverse impact on visitor populations, due to the potential overall reduction in the number of lodging and camping units in the park. This effect is offset somewhat by development of overnight accommodations in areas outside the park.

Regional Economy

Analysis

Under Alternative 1, the number of overnight accommodations and the composition of the Yosemite visitor population are not expected to change substantively from existing conditions. Yosemite visitor spending in the region would be expected to increase with increased visitor levels, resulting in a local, long-term, negligible to minor, beneficial effect on the regional economy. Alternative 1 is not expected to result in any shifts in regional employment.

Summary of Alternative 1 Impacts. Under Alternative 1, visitor populations and visitor spending would be expected to increase in the long-run, resulting in a regional, long-term, negligible to minor, benefit to the regional economy.

Cumulative Impacts

The cumulative impacts to the regional economy discussed in this section are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of this alternative.

Past Actions. The *Yosemite Valley Plan,* completed in 2000, calls for substantial construction associated with the relocation of administrative and employee housing facilities and redevelopment of areas within Yosemite Valley. This would have a short-term, beneficial impact on the regional economy due to project construction spending and employment. In the long term, the *Yosemite Valley Plan* would decrease in-park accommodations and increase accommodations outside the park. Overall, the economic impacts to the regional economy of changes from visitor spending and operations spending are expected to be long-term and beneficial.

Present Actions. Current projects that affect the regional economy include the Yosemite Motels Expansion, Yosemite Valley Shuttle Bus Stop Improvements, Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan, Resources Management Building, South Fork Bridge

Replacement, and Curry Village Employee Housing. Construction spending associated with these projects is expected to have a short-term, beneficial impact on the regional economy due to project construction spending and employment.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future projects that could have a cumulative, beneficial effect on the regional economy include:

- Curry Village and East Yosemite Valley Campground Improvements
- El Portal Road Improvements Project (Segment D)
- Indian Cultural Center
- Yosemite Lodge Area Redevelopment
- Wawona Campground Rehabilitation
- Yosemite Village Interim Parking Improvements

These projects are expected to have a short-term, beneficial impact on the regional economy due to project construction spending and employment. Development of new campgrounds and cabins near Curry Village would increase the overnight lodging capacity in Yosemite Valley somewhat, which would increase visitor spending and benefit the regional economy.

These cumulative projects would have a short-term, minor, beneficial effect on the regional economy, primarily due to construction spending and employment. The cumulative projects would have a long-term, negligible to minor, beneficial effect on the regional economy due to increased regional output and employment resulting from increased overnight accommodations in the park and in local communities.

Overall, Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a cumulative, short-term, minor, beneficial impact on the regional economy due to construction spending and employment and a long-term, negligible to minor, beneficial impact on the regional economy due to increased overnight accommodations in the park and in local communities.

Concessioner

Analysis

Continuation of current policies regarding user capacity within the Merced River corridor would not substantively change the services and facilities operated by the primary park concessioner. Increases in future visitor populations would result in a local, long-term, negligible to minor, benefit to the concessioner.

Summary of Alternative 1 Impacts. Under Alternative 1, accommodations and facilities in the park would be maintained at their current levels. Increases in future visitor populations would result in a local, long-term, negligible to minor, benefit to the concessioner.

Cumulative Impacts

Cumulative impacts to concessioner operations are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of this alternative.

Past Actions. The *Yosemite Valley Plan*, completed in 2000, provides for a reduction in overnight accommodations in Yosemite Valley and relocation of some employee housing to areas outside of the Valley, which would result in a local, long-term, adverse impact on concessioner operations.

Present Actions. The Curry Village Employee Housing project will provide safe and efficient housing for some concessioner employees currently housed in temporary housing in the Valley. This would result in a local, long-term, beneficial effect on concessioner operations.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions proposed in the region that could affect concessioner operations are separated below into two general categories: (1) projects anticipated to have a net beneficial effect; and (2) projects anticipated to have a net adverse effect.

Reasonably foreseeable future projects that could have a cumulative, beneficial effect on concessioner operations include:

- Curry Village and East Yosemite Valley Campgrounds Improvements
- Yosemite Lodge Area Redevelopment

These projects will add some overnight accommodations in the Valley and result in more visitor spending, resulting in a long-term benefit on concessioner operations.

A reasonably foreseeable future project that could adversely affect the concessioner is the update to the *Yosemite Wilderness Management Plan*. New policies adopted in this plan could restrict or reduce facilities and/or activities in the wilderness, including concessioner run facilities, resulting in a potential loss of revenues to the concessioner.

The cumulative projects would have a local, long-term, minor to moderate, adverse impact on the primary park concessioner associated with locating new employee housing outside of the Valley and possible restrictions or reductions in wilderness facilities or activities. The adverse effect would be partially offset by increased accommodations being developed in Curry Village and at Yosemite Lodge. The impact intensity of any planning projects would depend on the extent to which the *Yosemite Valley Plan's* recommendations are implemented.

Overall, Alternative 1 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, cumulative adverse impact on the concessioner associated with locating new employee housing outside of the Valley and possible future restrictions in wilderness areas.

Park Operations and Facilities

Analysis

The following discussion provides an overview of the types of impacts to park operations, infrastructure, facilities, and energy consumption that could occur within each segment of the Merced River corridor under Alternative 1. Under Alternative 1, park management would continue to protect and enhance the ORVs of the Merced River through implementation of the Merced River Plan and other existing park management policies.

Park Operations

Impacts in Wilderness. Park operations in the Wilderness segments include (1) visitor protection personnel (backcountry patrol rangers and Little Yosemite Valley campground rangers); (2) National Park Service and concessioner stock operations personnel that support trail maintenance, forestry management, and the Merced Lake High Sierra Camp; (3) facilities maintenance personnel that perform trail repair and construction and campground maintenance; and (4) resources management and science personnel that monitor impacts to river-related ORVs.

User capacity within the Wilderness segments is currently addressed through the existing trailhead quota system and monitoring of wilderness resource conditions under WIMS. Under Alternative 1, the trailhead quota system would continue to be implemented. The trailhead quota system has been in place for more than 25 years and is currently operating below capacity. Until capacity is reached, it is expected that any increase in visitor use could be accommodated without increasing park staff, ranger patrols, or related wilderness activities (such as periodic restoration in some areas and continued implementation of WIMS). Therefore, Alternative 1 would likely have a negligible effect on park operations in the Wilderness segments of the Merced River corridor.

Impacts in Yosemite Valley. Park operations in Yosemite Valley include (1) visitor protection and law enforcement personnel (enforcement patrol rangers, mounted-horse patrol rangers, traffic management, emergency medical response, structural and wildland fire protection, and resource protection); (2) National Park Service and concessioner stock operations personnel in two stables and tack storage areas; (3) administrative management personnel (Superintendent's Office); (4) facilities maintenance personnel that perform water and electric utility systems maintenance, road and trail repair and construction, campground maintenance, and employee and administrative buildings and grounds maintenance; (5) resources management and science personnel that perform ecological restoration project implementation, wildlife management, and monitoring of impacts to river-related ORVs; (6) business and revenue management personnel; and (7) interpretation personnel at the Yosemite Valley Visitor Center and Museum, the Nature Center at Happy Isles, and the park media relations office and field operations (such as evening programs and ranger-led walks).

Visitor capacity in the Valley is not actively managed on a daily basis, but is controlled through facility capacities, primarily related to overnight accommodations and available parking. Current management practices sometimes result in heavy traffic congestion on peak summer weekends and holidays, when parking facilities can reach capacity. Park management occasionally restricts access to the Valley, and park personnel are required to manage traffic along roads and at key intersections and to assist with parking during periods of peak use. In addition, heavy traffic congestion has at times impeded emergency vehicle access, which in turn adversely affects visitor safety.

Under Alternative 1, heavy traffic congestion during periods of peak visitation would continue to require park personnel to manage traffic flow and assist with visitor parking, resulting in minor to moderate, adverse impacts to park operations and visitor safety during periods of high visitor use.

Impacts in the Gorge. Park operations in the Gorge segment include (1) visitor protection personnel (law enforcement patrol rangers, emergency medical response, structural and wildland fire protection, and resources protection); (2) facilities maintenance personnel that perform water

and electric utility systems maintenance, road repair and construction, picnic area maintenance, and employee and administrative buildings and grounds maintenance; (3) resources management and science personnel that conduct wildlife management and ecological monitoring and restoration activities; and (4) business and revenue management personnel that staff the Arch Rock Entrance Station.

Although the Gorge segment has limited visitor facilities, implementation of the Restricted Access Plan in Yosemite Valley could increase visitation in the gorge and thus have adverse effects on park operations and facilities in the Gorge segment. However, the majority of the Gorge segment is relatively inaccessible, and visitor use is likely to increase only slightly during peak visitation periods in areas of easy access (e.g., road turnouts and the Cascades area). Consequently, under Alternative 1, the effects on park operations in the Gorge are expected to be negligible.

Impacts in El Portal. Park operations in El Portal include (1) visitor protection personnel (law enforcement patrol rangers, emergency medical response, structural and wildland fire protection, and resource protection; (2) facilities maintenance personnel that perform water and electric utility systems maintenance, wastewater treatment plant operations, historic preservation, road repair and construction, community amenity maintenance (such as fields, play parks, and public restrooms), employee and administrative buildings and grounds maintenance, and project design and engineering; (3) resources management and science personnel; (4) business and revenue management staff associated with the Office of Special Park Uses; (5) administrative management personnel associated with shipping and receiving operations, human resources, fiscal and employee housing offices, information technology, and procurement/contracting; (6) interpretation personnel associated with curatorial and archiving operations and park publications; and (7) project management personnel that perform environmental and cultural resources NEPA compliance and construction management operations.

Under Alternative 1, the boundary for the El Portal segment of the river corridor would be based on the 100-year floodplain or the River Protection Overlay, whichever is greater. The No Action Alternative zoning defines 56 acres as Park Operations and Administration (3C), and 137 acres as Day Use (2C).

The river corridor boundary and zoning under Alternative 1 are not expected to affect park operations, which would be limited to periodic routine maintenance and repair activities. Alternative 1 provides flexibility for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries, which would require the removal of park operations from the park and the design and construction of new facilities in the El Portal Administrative Site. The removal of existing facilities and the construction of new facilities would result in a short-term, minor impact to park operations. However, the river corridor boundary and zoning associated with Alternative 1 would result in an overall long-term, moderate, beneficial impact to park operations.

Impacts in Wawona. Park operations in Wawona include (1) visitor protection personnel (law enforcement patrol rangers, emergency medical response, structural and wildland fire protection, and resource protection); (2) facilities maintenance personnel that perform water and electric utility systems maintenance, wastewater treatment plant operations, road and trail repair and construction, and employee and administrative buildings and grounds maintenance; (3) resources management and science personnel; (4) business and revenue management personnel associated

with campground operations; and (5) interpretation personnel associated with the Pioneer Yosemite History Center and field operations (such as evening programs and ranger-led walks).

Visitor capacity in the Wawona segments is not actively managed, but is limited by available overnight lodging and parking areas. The Wawona area experiences heavy traffic congestion during peak visitation periods due to limited parking capacity at the Mariposa Grove of Giant Sequoias and the South Entrance Station. Users who cannot be accommodated in either of these locations are encouraged to park in the Wawona Service Station/Grocery Store parking lot, which in turn causes congestion for users trying to access the Pioneer Yosemite History Center and concessioner stable operations. Park operations are adversely affected in terms of the need for additional visitor protection staff to manage traffic and visitor safety in the area.

Under Alternative 1, the effects to park operations are expected to be negligible, except during peak periods when additional park personnel are required to manage traffic congestion. During these periods, the effects to park operations in the Wawona segments of the river corridor are expected to be short term, minor to moderate, and adverse.

Park Infrastructure and Facilities

Impacts in Wilderness. Park infrastructure and facilities in the Wilderness segments include Little Yosemite Campground, Moraine Dome Campground, the Merced Lake High Sierra Camp, Backpackers Campground, and the Merced Lake Ranger Station. There are restrooms in Little Yosemite Valley, the Merced Lake High Sierra Camp, and the Merced Lake Campground. Additionally, there are 10 footbridges within the corridor.

User capacity within the Wilderness segments is currently addressed through trailhead quotas and monitoring of wilderness resource conditions under WIMS. Under Alternative 1, the trailhead quota system would continue to be implemented. Although park visitation is expected to increase in the future, the trailhead quota system could accommodate additional demand before reaching capacity.

Until capacity is reached, it is expected that any increase in wilderness visitation could be accommodated without additional park infrastructure or facilities. Therefore, Alternative 1 is expected to have a negligible effect on park infrastructure and facilities in the Wilderness segments of the Merced River corridor and would be limited to those resulting from periodic routine maintenance activities.

Impacts in Yosemite Valley. Park infrastructure and facilities in Yosemite Valley include an extensive network of underground water, sewer, and electric utilities; a network of roads, bridges (roadway and pedestrian), and paved and unpaved trails; parking lots; public restrooms; shuttle buses; lodging and campground facilities; eating and retail establishments; swimming pools; tennis courts; an ice rink; and administrative, maintenance, and storage facilities. Under Alternative 1, these facilities would continue to operate within their design capacities. During peak visitation periods (summer and certain holidays), some of these facilities reach and sometimes exceed their design capacities (e.g., lodging, campgrounds, roads, intersections, and parking facilities).

Under Alternative 1, the overall effects to park infrastructure and facilities are expected to be long term, adverse, and minor and would be limited to those resulting from periodic routine maintenance and repair activities.

Impacts in the Gorge. Park infrastructure and facilities in the Gorge segment include El Portal Road; an aboveground electric transmission line to the decommissioned Cascades Powerhouse; an underground sewer, electric, and communications utility corridor along the entire length of the Merced River gorge; the Arch Rock Entrance Station; restroom facilities; the Cascades Picnic Area; and the Cascades Creek Bridge. The majority of the Gorge segment is relatively inaccessible, and visitor use is likely to increase only slightly during peak visitation periods in easily accessible areas (e.g., road turnouts and the Cascades Picnic Area).

Therefore, under Alternative 1, the overall effects to park infrastructure and facilities in the Gorge segment are expected to be negligible and would be limited to those resulting from periodic routine maintenance and repair activities.

Impacts in El Portal. Park infrastructure and facilities in El Portal include Highway 140, the El Portal Wastewater Treatment Plant, aboveground electric and communication transmission lines that run to (and beyond) the park boundary, an underground water and sewer utility corridor in the El Portal Administrative Site, three employee housing areas (Rancheria Flat, Old El Portal, and Trailer Village/Abbieville), National Park Service and park partner administrative offices, maintenance and warehouse storage facilities, and community amenities (such as the Child Development Center and Community Hall).

The river corridor boundary and zoning are not expected to affect existing infrastructure and facilities in El Portal, and park operations activities would be limited to periodic routine maintenance.

The No Action Alternative zoning defines 56 acres as Park Operations and Administration (3C), and 137 acres as Day Use (2C). The river corridor boundary and zoning designations under Alternative 1 provide park management with the flexibility to relocate utilities, facilities, and services to El Portal that are currently within park boundaries, which would require the removal of park infrastructure and facilities from the park and the design and construction of new facilities in the El Portal Administrative Site. The removal of existing facilities and the construction of new facilities would represent a short-term, minor impact to park infrastructure and facilities. However, the river corridor boundary and zoning associated with this alternative would result in an overall long-term, minor to moderate, beneficial impact to park infrastructure and facilities in the El Portal segment of the river corridor.

Impacts in Wawona. Park infrastructure and facilities in the Wawona segments include Wawona Road, the Wawona Wastewater Treatment Plant and maintenance complex, an underground water and sewer utility corridor, employee housing, community amenities, campgrounds, the Pioneer Yosemite History Center, and the Wawona Hotel and Golf Course.

During peak visitation periods (summer and certain holidays), some of these facilities reach and sometimes exceed their design capacities (e.g., roads, intersections, and parking facilities). However, under the No Action Alternative, the overall effects to park infrastructure and facilities would likely be negligible and would be limited to those resulting from periodic routine maintenance and repair activities.

Energy Consumption

Impacts in Wilderness. Energy consumption in the Wilderness segments of the river corridor is confined to the use of propane gas, diesel fuel, and wood for operations at the Merced Lake High

Sierra Camp and Merced Lake Ranger Station. Propane gas is used for refrigeration, stoves/ovens, and lighting. Diesel fuel is used as a backup power source to power generators if propane gas is not available. Wood is used in campfires and indoor wood stoves.

Energy use would likely continue in the manner described above. Therefore, Alternative 1 is expected to have a negligible effect on energy consumption in the Wilderness segments.

Impacts in Yosemite Valley. Energy consumption for day-to-day National Park Service and concessioner operations in Yosemite Valley is the highest of the river corridor segments. The types of energy used in the Valley include electricity, propane gas, engine oil, diesel fuel, gasoline, and wood.

Under Alternative 1, housing and facilities in the Valley would not change and therefore space- and water-heating energy consumption would remain the same as under existing conditions. Although vehicle-use patterns would not change, the total visitor, employee, and National Park Service/concessioner vehicle gasoline and diesel fuel consumption is expected to decline in the future due to improved fuel economy and the increased use of alternative fuels, resulting in a long-term, beneficial impact. In addition, Alternative 1 is not expected to have a discernible impact on home energy consumption because the housing stock would remain the same.

Overall, Alternative 1 would result in a long-term, minor, beneficial impact with respect to energy consumption in the Valley segment.

Impacts in the Gorge. Energy consumption for facilities operations in the Gorge segment includes the use of electricity and propane gas. Energy use would likely continue at current levels. Therefore, Alternative 1 is expected to have a negligible effect on energy consumption in this segment of the river corridor.

Impacts in El Portal. Energy consumption for employee housing areas, concession operations, administrative and maintenance operations, and community amenities in El Portal includes the use of electricity, propane gas, engine oil, diesel fuel, gasoline, and wood.

Impacts related to energy consumption in El Portal would be similar to those described for Yosemite Valley. Under Alternative 1, space- and water-heating energy consumption in El Portal would remain the same because housing and facilities would not change. Although vehicle-use patterns would not change, the total visitor, employee, and National Park Service/concessioner vehicle gasoline and diesel fuel consumption is expected to decline in the future due to improved fuel economy and the increased use of alternative fuels, resulting in a long-term, beneficial impact. In addition, Alternative 1 is not expected to have a discernible impact on home energy consumption because the housing stock would remain the same.

Overall, Alternative 1 would result in a long-term, minor, beneficial impact with respect to energy consumption in the El Portal segment of the river corridor.

Impacts in Wawona. Energy consumption in the Wawona segments includes the use of electricity, propane gas, engine oil, diesel fuel, gasoline, and wood. Impacts related to energy consumption in Wawona would be similar to those described for El Portal and Yosemite Valley. Under Alternative 1, space- and water-heating energy consumption in Wawona would remain the same because housing and facilities would not change. Although vehicle-use patterns would not

change, the total visitor, employee, and National Park Service/concessioner vehicle gasoline and diesel fuel consumption is expected to decline in the future due to improved fuel economy and the increased use of alternative fuels, resulting in a long-term, beneficial impact. In addition, Alternative 1 is not expected to have a discernible impact on home energy consumption because the housing stock would remain the same.

Overall, Alternative 1 represents a long-term minor, beneficial impact with respect to energy consumption in the Wawona segments of the river corridor.

Summary of Alternative 1 Impacts. The effects of Alternative 1 on park operations are expected to be negligible, except during times of high visitor use when additional park personnel are required to manage traffic congestion and visitor safety in the Valley and Wawona. During these periods, the effects to park operations would likely be short term, minor to moderate, and adverse.

During peak visitation periods (summer and certain holidays), some of the park's facilities reach and sometimes exceed their design capacities in the Valley and Wawona. However, under Alternative 1, the overall effects to park infrastructure and facilities are expected to be negligible and limited to those associated with periodic routine maintenance and repair activities.

The river corridor boundary and zoning in El Portal under Alternative 1 would result in an overall long-term, minor to moderate, beneficial impact to park operations, infrastructure, and facilities.

Alternative 1 would result in an overall long-term, minor, beneficial impact with respect to energy consumption, primarily because gasoline and diesel fuel consumption is expected to decline in the future due to improved fuel economy and the increased use of alternative fuels.

Cumulative Impacts

Cumulative impacts on park operations and facilities are based on an analysis of past, present, and reasonably foreseeable future actions in the immediate Yosemite region in combination with potential effects of this alternative. The extent to which past, present, or reasonably foreseeable projects could have a cumulative effect, when combined with other actions that could result under current National Park Service management strategies, is determined by whether such projects would affect demand for park operations, services, and facilities, including maintenance of utility systems, campgrounds, roads, and trails; provision of interpretation programs; visitor protection; and natural and cultural resources protection.

Past Actions. Park operations and facilities have been affected by numerous past National Park Service management decisions since the inception of Yosemite National Park. Primary among these are the relocation of administrative and maintenance support functions and facilities to El Portal (mostly beneficial); the addition of new employee housing in El Portal (mostly beneficial); the rehabilitation of water, sewer, electric, and communications utility systems (mostly beneficial); and the removal of old wastewater treatment plants from Yosemite Valley and El Portal to the new location at Railroad Flat in El Portal. More recent actions that have affected park operations and facilities include the Cascades Diversion Dam Removal (mostly beneficial) and the El Portal Road Improvements Project (Segments A, B, and C).

Overall, the net cumulative effect of these past actions is beneficial in that they have served to consolidate, modernize, or update park operations and facilities; have removed facilities that were

unsafe or required continued maintenance and repair; or responded to potential safety concerns for park personnel or visitors.

Present Actions. Present actions that affect park operations and facilities include the following:

- Curry Village Employee Housing
- Happy Isles Dam Removal
- Happy Isles to Vernal Fall Trail Reconstruction
- Lower Yosemite Fall Project
- Replacement/Rehabilitation of Yosemite Valley Force Main Sewer Line
- Resources Management Building
- South Fork Bridge Replacement
- Yosemite Valley Shuttle Bus Procurement
- Yosemite Valley Shuttle Bus Stop Improvements
- Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan

These projects, which are in various stages of implementation, represent a short-term, adverse impact to park operations and facilities because planning, design development, and construction activities associated with these projects place increased demands on park operations staff. However, in the long term (after the above-listed actions are completed), it is expected that these projects would provide a net beneficial cumulative effect on park operations and facilities. The benefits would result because these actions would serve to consolidate, modernize, or update park operations and facilities; increase overall operational efficiency; and, in some instances, help park staff to provide enhanced education and interpretation programs for visitors.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions that would have an effect on park operations and facilities include the following:

- Out-of-Valley Campground Plan
- Wawona Campground Rehabilitation
- El Portal Road Improvements Project (Segment D)
- Parkwide Data Communications
- Update to the *Yosemite Wilderness Management Plan*
- Northside-Southside Drive Repaving
- Curry Village and East Yosemite Valley Campgrounds Improvements
- El Portal Concept Plan
- Indian Cultural Center
- Tuolumne Meadows Concept Plan
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Yosemite Lodge Area Redevelopment
- Yosemite Village Interim Parking Improvements
- El Portal Old Wastewater Treatment Facility Removal

Planning and design for these future actions will create a short-term, minor to moderate, adverse impact on park operations and facilities by placing increased demands on park operations staff. However, in the long term (after these actions are completed), it is expected that these projects would provide an overall long-term, beneficial cumulative effect on park operations and facilities by consolidating, modernizing, or updating park operations and facilities; increasing overall operational efficiency; reducing or minimizing long-term maintenance and repair requirements; and, in some instances, helping park staff to provide enhanced education and interpretation programs for visitors.

These past, present, and reasonably foreseeable future actions could have short-term, minor to moderate, adverse impacts to park operations and facilities during the planning, design, and construction phases. Overall, these cumulative actions, combined with Alternative 1, could have a net long-term, beneficial cumulative effect on park operations and facilities.

Unavoidable Adverse Impacts

The following discussion identifies unavoidable adverse impacts to resources associated with implementation of Alternative 1, the No Action Alternative. For the purposes of this document, these impacts have been identified as being unavoidable, moderate to major, and adverse.

- Man-made obstructions would continue to obstruct the free-flowing characteristics of the Merced River and subsequently alter stream processes that define channel characteristics such as channel shape and sinuosity and the ability of the river to naturally discharge and dissipate channel-forming flows or flood flows. The streamflow would continue to be permanently altered and would adversely affect the ORVs associated with the free-flowing nature of the river, resulting in an unavoidable adverse impact.
- Heavy traffic congestion during periods of peak visitor use would continue to require park personnel to help manage traffic flow and assist with visitor parking in Yosemite Valley, resulting in unavoidable adverse impacts to park operations and visitor safety during periods of high visitor use.
- In El Portal, the existing river boundary and management zoning could result in unavoidable adverse impacts to land use due to the narrow river corridor and the potential for increased development density in the area outside the river corridor in the future.

Irreversible and Irretrievable Commitments of Resources

Alternative 1 would not result in the temporary or permanent loss of any resource, other than energy consumption associated with continued park operations and visitor services. Although energy consumption in the park will continue into the future, overall consumption is expected to decrease with time as the park converts to more efficient types of equipment and fleet vehicle turnover occurs, resulting in the use of more technically advanced and energy-efficient vehicles.

Relationship of Short-Term Uses of the Environment and Long-Term Productivity

Under Alternative 1, the existing relationship of short-term uses of the environment and the maintenance and enhancement of long-term productivity would be expected to continue, with no change in current conditions. For example, ongoing impacts to the free-flowing condition of the river would be unchanged, and heavy traffic congestion during periods of peak visitor use would

continue to require park personnel to help manage traffic flow and assist with visitor parking in Yosemite Valley.

The river corridor and management zoning for El Portal would allow for development of park administrative facilities within 56 acres of the corridor (primarily north of the river), only if it can be completed in a manner which protects the ORVs. The narrow river corridor provides the park greater flexibility to develop administrative facilities outside the river corridor, when compared to Alternatives 2 through 4, and a long-term benefit to overall park operations.

Responsiveness of Alternative 1 to the Ninth Circuit Court of Appeals' Direction on the Merced River Plan

The Ninth Circuit Court of Appeals (or the Court) directed the National Park Service to revise the Merced River Plan to address user capacity and to draw the boundaries in the El Portal segment in a manner that protects its ORVs. In addition, the District Court for the Eastern District of California directed the National Park Service to address how the Merced River Plan would amend the 1980 *General Management Plan*.

User Capacity

In addressing user capacity, the Ninth Circuit Court of Appeals specifically directed the National Park Service to "adopt specific limits on user capacity consistent with both the Wild and Scenic Rivers Act and the instruction of the Secretarial Guidelines and that such limits describe an actual level of visitor use that will not adversely impact the Merced's ORVs."

Under the No Action Alternative, the park would continue its existing user capacity program, which contains numerous specific, measurable limits on use. Most notable among these limits is the wilderness trailhead quota system and the associated wilderness impact monitoring system. The trailhead quota system applies to 53 of the 81 miles of the Merced River corridor. Under this system, overnight users of the wilderness must receive a permit for entry into wilderness areas. The total number of overnight users allowed in the Yosemite Wilderness (which includes large areas outside Merced River corridor) is 1,280 per day. This total number is apportioned over the various trailheads that lead into the park's wilderness areas. Specific trailhead quotas are reflected in table II-1. The Wilderness Impacts Monitoring System (WIMS) is also used to ensure protection of wilderness resources. Under WIMS, park staff conduct wilderness-wide inventory and monitoring studies focused on use-related impacts on campsites and trails. Data gathered from these studies are used to determine when, where, and why significant change occurs, and to provide a system for tracking those changes. It provides wilderness managers a system to help understand the relationship of natural conditions, visitor experience, and wilderness resource management. WIMS is also used to track the effectiveness of the wilderness trailhead quotas in preventing unacceptable human-caused changes. Information from WIMS has been used over the years to adjust the trailhead quotas as needed to protect wilderness resources.

Additional measurable limits on use of the Yosemite Wilderness include limits on party size. Overnight visitors in the wilderness may travel in groups of up to 15 if using established trails. Groups using cross-county routes are limited to 8 persons. Stock party size is limited to 25 head on existing trails, and stock may not travel off-trail except to feed and water. Day visitors into wilderness may travel in groups up to 35 on established trails, and groups up to 8 on cross-country routes.

Other specific, measurable limits on recreational uses of the river corridor are included in the Superintendent's Compendium. The maximum number of bicyclists in any one group is 30, and bicyclists are limited to paved roads and trails. (Bicycles are not allowed in the wilderness.) Fishing is prohibited along certain parts of the river corridor (e.g., swimming beaches), and catch limits apply to many types of fish. Boating restrictions included in the Compendium establish time frames and specific areas for use of nonmotorized boats on the portion of the river in east Yosemite Valley. Motorized boats are not allowed on any parts of the river under National Park Service management. Flotation devices are allowed on the Middle and South Forks of the Merced River, but their use is restricted in the Valley. Flotation devices may not be used in parts of the Yosemite Valley segment when water levels exceed a designated limit and when temperatures are below a designated limit.

The No Action Alternative also includes facility capacity limits and utility system capacity limits. Facility capacities in Yosemite Valley are designed to accommodate 18,241 visitors per day. Facility capacities for Wawona are designed to accommodate 3,035 visitors per day. These numbers were included in the 1980 *General Management Plan* as the goals for daily visitor use levels in these areas. The capacity of the El Portal wastewater treatment plant is currently set at 1 million gallons per day. This limit is established in the facility's operating permit issued by the California Regional Water Quality Control Board. All wastewater from the Valley, Gorge and El Portal segments of the river is treated at the El Portal wastewater treatment plant. The Wawona wastewater treatment facility has a permitted capacity of 105,000 gallons per day.

Under the No Action Alternative, the park could also implement temporary access restriction policies in Yosemite Valley. Under these policies, when traffic levels in the Valley reach a certain limit, the park temporarily restricts vehicular access into the Valley. (The traffic situations that trigger implementation of the Restricted Access Plan are described in Chapter II.) Similar temporary access restrictions can be implemented in the Wawona area when all day-use parking spaces are filled.

Finally, this alternative includes the other elements of the Merced River Plan, including management zoning and the River Protection Overlay. Zoning establishes limits on the type of facilities allowed in various areas, which in turn, relates to the number of people and the types of uses that would be expected in each area. The River Protection Overlay establishes stringent requirements on the development or redevelopment of facilities in the area closest to the river, which in turn, relates to the number of people and the types of use that would be expected in this area.

Although there are many specific, measurable limits on the types and levels of use of the river corridor under this alternative, the lack of a VERP program would likely not satisfy the requirements established by the Court for a user capacity program.

El Portal Boundary

The Court directed that the National Park Service "redetermine the river area boundaries at El Portal" and that these boundaries "must be drawn so as to protect and enhance the ORVs causing that area to be included within the Wild and Scenic River System."

In El Portal, Alternative 1 would retain a river corridor boundary that follows the 100-year floodplain or the River Protection Overlay, whichever is greater. Although this boundary does not

encompass all of the identified ORVs for the segment, other existing elements of the Merced River Plan and other park policies and environmental regulations provide protection for these values. The zoning under this alternative would allow for development of park administrative facilities within the corridor (primarily north of the river), only if it can be completed in a manner which protects the ORVs.

All facility development proposed within the El Portal Administrative Site would require environmental compliance review, which would include a review of the proposed development's consistency with all elements of the Merced River Plan, including protection and enhancement of the ORVs.

Despite these existing protections, the boundary in Alternative 1 does not fully meet the Court's direction to redraw the boundaries to protect the ORVs.

Amendments to the 1980 *General Management Plan*

The Wild and Scenic Rivers Act requires the managing agencies to prepare comprehensive management plans for the river and its immediate environment. The Merced River Plan, adopted in November 2000, provides direction on these issues for the 81 miles of the Merced Wild and Scenic River under the jurisdiction of the National Park Service.

Congress further authorized the National Park Service to prepare its management plan for the river by making appropriate revisions to the park's 1980 *General Management Plan* (16 USC 1274[a][62]). The Wild and Scenic Rivers Act generally provides that river management plans "shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands" (16 USC 1274).

While it is not the policy of the National Park Service retroactively to revise existing plans, Section 1274(a)(62) of the Wild and Scenic Rivers Act requires that the *General Management Plan* be revised to meet the requirements of section 1274(b). Accordingly, the Merced River Plan adopted in November 2000 resulted in the following amendments to the *General Management Plan*. (For the purposes of the following analysis, the El Portal boundary and the VERP program were not included because those elements of the November 2000 plan were deemed invalid by the Court.) The Merced River Plan's management zoning, River Protection Overlay, river corridor boundaries and classifications, and the ORVs revise the *General Management Plan* by establishing more detailed land-use prescriptions that must be applied in future site-specific planning. The Merced River Plan's Section 7 determination process is a tool that augments the goals of the *General Management Plan*. No development or use of National Park Service lands in the areas within the river corridor shall be undertaken that is inconsistent with the Wild and Scenic Rivers Act designation of the Merced River, or that is inconsistent with the Merced River Plan.

General Management Plan Goals

The *General Management Plan* establishes five broad goals for managing Yosemite National Park (NPS 1980a, pp. 1–4). Although the *General Management Plan* is over 20 years old, its goals are still valid today and apply to the management of the Merced River corridor under the Merced River Plan. The Merced River Plan works in concert with the goals set forth in the *General Management Plan*, and outlines an additional set of specific goals for management of the Merced Wild and Scenic River (NPS 2000c, pp. 23-24). The Merced River Plan's five goals were developed to further the policy established by the Wild and Scenic Rivers Act, namely to preserve

designated rivers in their free-flowing condition, and protect and enhance the river's ORVs. The five defining goals of the *General Management Plan* and the five goals of the Merced River Plan are intertwined, and no one goal can be emphasized to the complete exclusion of the others.

General Management Plan Management Objectives

The *General Management Plan* sets forth a number of Management Objectives that guide resource management, visitor use, and park operations (NPS 1980a, pp. 5-10). The elements of the Merced River Plan provide an added level of detailed guidance to park managers on how to achieve management objectives for the park. Those elements are boundaries (with the exception of El Portal), classifications, protection of ORVs, the Section 7 determination process, River Protection Overlay, and management zoning. For example, projects within the river corridor must protect and enhance ORVs and be consistent with the other elements of the Merced River Plan. Projects adjacent to the river corridor must protect ORVs, and depending on location, may need to undergo a Section 7 review if they affect the bed or banks of the river.

General Management Plan Land Management Zoning

The *General Management Plan* (NPS 1980a, pp. 10-13) specifies several land management zones, including a Development Zone. The management zones described in the Merced River Plan and the management zones proposed for the El Portal segment for Alternative 1 (see figure III-1) replace the Management Zoning Plan of the *General Management Plan* for those areas within the Merced Wild and Scenic River corridor boundaries. Zoning of areas outside the river corridor boundary remains unchanged; however, development and uses in areas adjacent to the river corridor must be protective of ORVs, as provided for in the Merced River Plan.

General Management Plan Visitor Use

The *General Management Plan* (NPS 1980a, pp. 15-19) establishes visitor use levels by limiting the number of overnight accommodations, campsites, and day-visitor parking spaces available. While this was a common method of regulating visitor use in 1980 when the *General Management Plan* was adopted, the Service-wide policy of the National Park Service is to use tools such as management zoning and VERP to manage appropriate types and levels of visitor use (National Park Service *Management Policies 2001*, p. 81). VERP, however, is not included in the No Action Alternative because the VERP program included in the November 2000 plan was not yet providing feedback regarding the status of ORVs. An aggregate figure for the river corridor could mask problems at hot spots and would not provide managers with useful guidance for addressing use-related problems potentially impacting ORVs.

For areas within the river corridor, this Revised Merced River Plan/SEIS revises the *General Management Plan* by adopting an array of specific measurable limits on the types and levels of use of the corridor and on facility and utility capacities. This user capacity program includes a network of mechanisms and methods that the National Park Service uses to address user capacity in the park, including specific limits on overnight use in wilderness areas, facility limits in day use areas, and other limits and restrictions as outlined in the Superintendent's Compendium. In addition to these specific measurable limits, park management uses other measures, such as management zoning and the River Protection Overlay, to direct visitor use and facility development in a manner that protects and enhances the ORVs and the free-flowing condition of the Merced River. The combination of these elements enables the National Park Service to administer the river corridor in a manner that protects and enhances the ORVs while allowing for appropriate levels of use and development.

General Management Plan Developed Area Plans

The *General Management Plan* (NPS 1980a, pp. 31-59) contains Developed Area Plans for areas within and adjacent to the river corridor. Development Concepts for areas within the river corridor must comply with the management elements of the Merced River Plan (boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and the park's user capacity management program). To the extent that any Development Concept is less restrictive than the Merced River Plan, the Merced River Plan controls. For the purposes of this No Action Alternative, the El Portal boundary and zoning map would not amend the *General Management Plan* because that boundary was deemed invalid by the Court. Actions adjacent to the river corridor but outside of the river boundary must also protect ORVs.

Table V-1 summarizes how Alternative 1 would affect the ORVs for each segment of the Merced River corridor.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
	MAIN STEM MERCED RIVER SEGMENTS	
1. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 1 would not affect the amount of the watershed which is within designated Wilderness. Alternative 1 would continue use of the trailhead quota system, along with implementation of VERP, to manage visitor use in designated Wilderness.
	Scenic – This segment includes views from the river and its banks of the glaciated river canyon, exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of the canyon, the riverbed, cascades, or rock formations from the river and its banks, as these views are not sensitive to visitor use impacts.
	Geologic Processes/Conditions – This segment traverses a U-shaped, glacially carved canyon separated by cascades and soda springs below Washburn Lake.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by continuation of existing policies under Alternative 1.
	Recreation – This segment provides outstanding opportunities for solitude along the river, with primitive and unconfined recreation. There is a spectrum of levels of recreational use. River-related recreational opportunities include day hiking, backpacking, horseback riding and packing, camping, and enjoyment of natural river sounds. Untrailed tributaries provide enhanced opportunities for solitude.	*Recreation* – Under Alternative 1, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system. Use of the trailhead quotas protects the opportunities for solitude by limiting the number of people in various areas of the wilderness, while providing opportunities for solitude and primitive, unconfined recreation, and a variety of river-related recreational opportunities in wilderness areas. Thus, these measures protect the spectrum of recreation opportunities and the recreation ORVs.
	Biological – This segment includes a nearly full range of intact Sierran riverine environments; high-quality riparian, meadow, and aquatic habitats (such as the meadow at Washburn Lake), and special-status species such as mountain yellow-legged frog.	*Biological* – Under Alternative 1, visitor use of wilderness areas will continue to be managed under existing wilderness management programs (trailhead quota system, group size limits, etc.). These limits on visitor numbers and group sizes reduce the potential for degradation of sensitive biological resources, protecting the biological ORV.
	Cultural – This segment includes portions of a prehistoric trans-Sierra route in use for thousands of years and many prehistoric sites. There are many historic resources such as homestead sites, trails, river crossings, High Sierra Camp sites, and structures.	*Cultural* – Under Alternative 1, visitor use of wilderness areas will continue to be managed under existing wilderness management programs (trailhead quota system, WIMS, etc.). Limits on the number of visitors accessing historic and cultural sites reduce the potential for damage to the sites. Therefore, the existing user capacity measures protect the cultural ORVs.
	Hydrologic Processes – The segment is characterized by a free-flowing river and excellent water quality. The river gradient drops from 13,000 to 6,000 feet in elevation. There are examples of natural conditions, including glacial remnants, a logjam in Little Yosemite Valley that is hundreds of years old, and numerous cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character or its gradient, glacial remnants, or cascades. The continuation of existing wilderness management programs (trailhead quota system, WIMS, etc.) would protect water quality by limiting the number of visitors in areas with no visitor facilities. Therefore, existing user capacity methods protect the hydrologic processes ORVs.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
Main Stem-Wilderness Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the all of the Wilderness segment ORVs by limiting development or uses that would adversely affect the ORVs.
2. Yosemite Valley	*Scenic* – This segment provides magnificent views from the river and its banks of waterfalls (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, Bridalveil, and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rock, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil). There is a scenic interface of river, rock, meadow, and forest throughout the segment.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of waterfalls and rock cliffs from the river and its banks. The continuation of existing user capacity measures, such as management zoning, would protect and enhance the scenic views of meadows and forests. Therefore, existing user capacity methods protect the scenic ORVs.
	Geologic Processes/Conditions – This segment contains a classic, glaciated, U-shaped valley, providing important examples of a mature meandering river; hanging valleys such as Yosemite and Bridalveil Creeks; and evidence of glaciation (e.g., moraines below El Capitan and Bridalveil Meadows).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking. Yosemite Valley is one of the premier outdoor recreation areas in the world.	*Recreation* – Implementation of Alternative 1 would continue existing user capacity measures, such as management zoning, to protect and enhance recreation in the Valley. Visitor levels would be managed through provision of appropriate levels of visitor facilities. Visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for a diversity of river-related species, including special-status species, neotropical migrant songbirds, and numerous bat species.	*Biological* – Implementation of Alternative 1 would protect and enhance low-elevation meadows, wetlands, riparian areas and other riverine areas through management of visitor use in the Valley using existing user capacity measures, including facility limits and management zoning.
	Cultural – This segment contains evidence of thousands of years of human occupation reflected in a large number of archeological sites and continuing traditional use today. Nationally significant historic resources are found here, such as designed landscapes and developed areas, historic buildings, and circulation systems (trails, roads, and bridges) that provide visitor access to the sublime views of natural features that are culturally valuable.	*Cultural* – Implementation of Alternative 1 would protect and enhance cultural resources through management of visitor use in the Valley using existing user capacity measures, such as facility limits and management zoning.
	Hydrologic Processes – This segment is characterized by a meandering river, world-renowned waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes.	*Hydrologic Processes* – Visitor use would not affect the Valley's spectacular waterfalls, or the river's meandering character, flood regime, or fluvial processes. Implementation of Alternative 1 would protect and enhance wetlands through management of visitor use in the Valley using existing user capacity measures, such as facility limits and management zoning.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
Yosemite Valley Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Yosemite Valley segment by managing development and use in a manner that would protect and enhance the ORVs.
3. Gorge[a]	*Scenic* – This segment provides views from the river and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of the Cascades, rapids, waterfalls, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment is characterized by a classic V-shaped river gorge with a continuous steep gradient.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
	Recreation – This segment provides a spectrum of river-related recreational opportunities, such as picnicking, fishing, photography, and sightseeing.	*Recreation* – Implementation of Alternative 1 would continue existing user capacity measures, such as management zoning, to protect and enhance recreation in the Gorge. Visitor levels would be managed through provision of appropriate levels of visitor facilities and visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas and associated special-status species that are largely intact and almost entirely undisturbed by humans.	*Biological* – Implementation of Alternative 1 would protect and enhance the diverse riparian areas and their associated special-status species through management of visitor use using existing user capacity measures, including facility limits and management zoning.
	Cultural – This segment contains cultural resources, including prehistoric sites and historic sites and structures such as those relating to historic engineering projects.	*Cultural* – Implementation of Alternative 1 would protect and enhance cultural resources through management of visitor use in the Gorge segment using existing user capacity measures, such as facility limits and management zoning.
	Hydrologic Processes – This segment is characterized by exceptionally steep gradients (2,000-foot elevation drop in approximately 6 miles).	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
Gorge Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Gorge segment by managing development and uses that would adversely affect the segment's ORVs.
4. El Portal	*Geologic Processes/Conditions* – This segment contains a transition from igneous to metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, or to the proposed river corridor boundary and management zoning designations, and would not be affected by Alternative 1.
	Recreation – This segment provides a range of river-related recreational opportunities, in particular whitewater rafting and kayaking (class III to V) and fishing.	*Recreation* – Implementation of Alternative 1 would protect and enhance recreation in El Portal through management of visitor use in El Portal using existing user capacity measures. The proposed El Portal boundary and the management zoning proposed would not affect access to a range of recreational opportunities.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
	Biological – This segment contains riverine habitats such as riparian woodlands and associated federal and state special-status species, including Tompkin's sedge and Valley elderberry longhorn beetle and its critical habitat (elderberry shrub). Expanses of north-facing habitat allow unlimited access to the riparian zone for wildlife species.	*Biological* – Implementation of Alternative 1 would protect and enhance these biological resources through management of visitor use using existing user capacity measures. The proposed boundary and management zoning designations would protect biological resources by requiring protection of these resources during site planning, design and construction.
	Cultural – This segment contains some of the oldest archeological sites in the Yosemite area, as well as many historic Indian villages and traditional gathering places. River-related historic resources include structures related to early tourism and industrial development.	*Cultural* – Implementation of Alternative 1 would protect and enhance cultural resources through implementation of a boundary that incorporates cultural resources within a quarter-mile of the river. In addition, management of visitor use in El Portal and implementation of management actions under VERP, as needed, to address visitor-related impacts, will protect and enhance cultural resources.
	Hydrologic Processes – This segment is characterized by seasonally continuous rapids.	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
El Portal Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs in the El Portal segment by managing development and uses that would adversely affect the segment's ORVs.
	SOUTH FORK MERCED RIVER SEGMENTS	
5. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 1 would not affect the amount of the watershed that is within designated Wilderness. Alternative 1 would continue use of the trailhead quota system to manage visitor use in designated Wilderness. This would protect the natural, cultural, and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment provides views from the river and its banks of unique river features, including large pothole pools within slickrock cascades, old growth forest, and meadows.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of pothole pools within slickrock cascades or old growth forest. Under Alternative 1, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quota system, WIMS, etc.). Implementation of these measures will protect meadows, old growth forests, and other sensitive areas from visitor use-related impacts.
	Geologic Processes/Conditions – This segment is characterized by glaciated valleys in the high country and V-shaped canyons above Wawona. Moraine meadows and soda springs above Gravelly Ford are also unique, river-related geologic features.	*Geologic Processes/Conditions* – Most of these geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation. This segment of the river is predominantly without trails, with the exception of four bridgeless trail crossings in the upper reaches of the segment.	*Recreation* – Under Alternative 1, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system. This system would protect the opportunities for solitude by limiting the number of people in wilderness areas, while providing for primitive, unconfined recreation.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
	Biological – This segment includes a nearly full range of riverine environments typical of the Sierra Nevada. Examples of river-related federal and state special-status species include Wawona riffle beetle and mountain yellow-legged frog.	*Biological* – Under Alternative 1, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quota system, WIMS, etc.). These programs protect the riverine communities and special-status species from visitor use-related impacts.
	Cultural – This segment includes river-related prehistoric sites and resources and reflects historic stock use and cavalry activities.	*Cultural* – Under Alternative 1, visitor use of wilderness areas will continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.). These measures protect cultural resources from visitor use-related impacts by limiting access to them.
	Hydrologic Processes – This segment is characterized by a free-flowing river and excellent water quality.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character. Water quality in wilderness areas will be protected under Alternative 1 through existing limits on visitor use in wilderness.
South Fork-Wilderness Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Wilderness segment by managing development and uses that would adversely affect the segment's ORVs.
6. Impoundment[b]	*Scenic* – This segment provides views from the river and its banks of the river and Wawona Dome.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of the river or Wawona Dome.
	Hydrologic Processes – This segment has excellent water quality.	*Hydrologic Processes* – Water quality would be protected under Alternative 1 through existing user capacity programs including limits on facilities and management zoning. These measures protect water quality by limiting access and use of the impoundment area.
Impoundment Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Impoundment segment by managing development and uses that would adversely affect the segment's ORVs.
7. Wawona	*Scenic* – This segment provides views from the river and its banks of Wawona Dome.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of the river or Wawona Dome.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and photography to hiking.	*Recreation* – Implementation of Alternative 1 would protect and enhance recreation in Wawona through continuation of existing user capacity management, through limits on facilities and management zoning. Visitors would continue to have access to a spectrum of recreational activities.
	Biological – This segment contains a diversity of river-related species, wetlands, and riparian habitats. There are federal and state special-status species in this segment, including the Wawona riffle beetle.	*Biological* – Implementation of Alternative 1 would protect and enhance wetlands, riparian habitats, and special-status species through management of visitor use under existing policies, such as facility limits and management zoning.

Table V-1
Effect of Alternative 1 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 1 on the ORVs
	Cultural – This segment contains evidence of thousands of years of human occupation, including numerous prehistoric and historic Indian villages, historic sites, structures, and landscape features related to tourism, early Army and National Park Service administration, and homesteading.	*Cultural* – Implementation of Alternative 1 would protect and enhance cultural resources through management of visitor use using existing measures, such as management zoning and limits of facilities.
Wawona Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Wawona segment by managing development and uses that would adversely affect the segment's ORVs.
8. Below Wawona	*Scenic* – This segment provides views from the river and its banks of continual whitewater cascades in the deep and narrow river canyon in a untrailed, undisturbed environment.	*Scenic* – Implementation of Alternative 1 would not affect the scenic views of whitewater cascades or untrailed, undisturbed environment.
	Geologic Processes/Conditions – This segment contains a transition from Paleozoic Era igneous to Cretaceous Period metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 1.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities include hiking, fishing, and whitewater kayaking.	*Recreation* – Implementation of Alternative 1 would protect and enhance recreation in the Wawona through management of visitor use using existing measures, such as management zoning and limits on facilities. Visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas that are intact and largely undisturbed by humans. River-related federal and state special-status species in this segment include the Wawona riffle beetle.	*Biological* – Implementation of Alternative 1 would protect riparian areas and special-status species through management of visitor use using existing measures, such as management zoning and limits on facilities.
	Cultural – This segment contains archeological sites and historic resources such as trail segments representing early cavalry activity.	*Cultural* – Implementation of Alternative 1 would protect and enhance cultural resources through management of visitor use using existing measures, such as management zoning and limits on facilities.
	Hydrologic Processes – This segment is characterized by a free-flowing river with continual whitewater cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character and whitewater cascades.
Below Wawona-Summary		The implementation of existing user capacity measures, along with implementation of the elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, and the Section 7 determination process) would result in protection of the ORVs of the Below Wawona segment by managing development and uses that would adversely affect the segment's ORVs.

NOTES:
a The Cascades Diversion Dam was removed in 2004. The segment that was formerly designated as 3a has been combined with the segment formally designated 3b and this entire area forms segment 3.
b The Impoundment would become part of segment 7, Wawona, if an alternative water source for the area was secured and the impoundment was removed.

Alternative 2: Interim Limits with VERP program

The environmental consequences analysis for this alternative addresses elements of the user capacity program for the entire Merced River corridor and the river corridor boundary and associated management zone prescriptions for the El Portal segment that have been specifically identified in Alternative 2. It does not provide an analysis of impacts that may be associated with elements of the park's existing user capacity programs as identified in Alternative 1. Similarly, this analysis does not address other existing management elements for the Merced River corridor that have been previously described and analyzed in the existing Merced River Plan/SEIS.

Natural Resources

Geology, Geohazards, and Soils

Analysis

The following discussion provides an overview of the types of impacts that could occur under Alternative 2 with respect to rockfall hazards, seismic hazards, and soils.

Rockfall Hazards. Under Alternative 2, rockfall hazards would remain essentially the same as described for Alternative 1, with the possible exception that management actions taken in response to indicators unrelated to rockfall hazard under the VERP program could reduce number of users in some areas that are prone to rockfall hazards. Along the Merced River, rockfalls can occur in the upper wilderness reaches, along the edges of Yosemite Valley, within the river gorge, and along the South Fork where the river is contained within canyons. Current park management policies and the *Yosemite Valley Geologic Hazard Guidelines* (Appendix C in NPS 2000e), which require most new facilities and uses to be placed outside the talus zone and the rockfall shadow zone, would continue to be implemented, as under Alternative 1. Although interim facility limits would be in effect until the VERP program under Alternative 2 was fully implemented, it is expected that in the near term, visitation levels would be similar to existing levels under Alternative 2 as under Alternative 1.

In addition to current management programs and policies, the interim limits with VERP program implemented under Alternative 2 provides for management actions that would be triggered to achieve or maintain established standards. Some of these management actions would likely have the effect of limiting users in some areas. As a result, in the long term, implementation of the interim limits with VERP program under Alternative 2 could slightly reduce visitation levels compared with future, long-term visitation levels under Alternative 1. This would, in turn, result in a slightly lower number of users exposed to rockfall hazards, and therefore would be a beneficial, albeit negligible, effect of this alternative.

Seismic Hazards. Potential seismic hazards in the Merced River corridor would be the same under Alternative 2 as described for Alternative 1.

As described for Alternative 1, the current park management policies and the *Yosemite Valley Geologic Hazard Guidelines* would continue to be implemented. Although interim facility limits would be in effect until the VERP program under Alternative 2 was fully implemented, it is expected that in the near term visitation levels would be similar under Alternative 2 as those under Alternative 1. The interim limits with VERP program implemented under Alternative 2, in addition to current management programs and policies, provides for management actions that

would be triggered to achieve or maintain established standards. Some of these management actions would have the effect of limiting users in some areas. As a result, in the long term, implementation of the interim limits with VERP program under Alternative 2 could slightly reduce the increase in visitation levels that could reasonably be expected to occur under Alternative 1. This would, in turn, result in a slightly lower number of users exposed to earthquake hazards, and therefore would be a beneficial, albeit negligible, effect of this alternative.

Impacts to Soils. Existing park management policies would continue to be implemented, as under Alternative 1. Although interim facility limits would be in effect until the VERP program under Alternative 2 was fully implemented, it is expected that visitation levels effects on soils would be similar to existing levels in the short term. In the long term under Alternative 2, the interim limits with the VERP program would monitor specific indicators and standards and implement management actions that could directly or indirectly protect soils from compaction and erosion in those areas of the river corridor zoned for high use. Management actions to protect and restore soils would include temporary site closures, redirection of visitors away from sensitive resources, trail removal/restoration, trail realignment, signage, education, and other actions as indicated by onsite conditions/variables. These actions would have short-term, minor, adverse effects during implementation, but the overall effects would be beneficial, moderate to major, and potentially long term. For example, hand tools could be used to loosen the topsoil of a social trail through a meadow, which could initially cause soil disturbance to a depth of a few inches but would promote site recovery the long term.

Under Alternative 2, as under Alternative 1, visitor use could continue to affect soils by contributing to erosion, soil compaction, and removal of surface soils. Excessive surface water runoff or loss of protective vegetation cover could cause erosion. Compaction of native soils could occur through concentrated visitor use in localized areas, or excessive vehicle traffic in unpaved areas. In the long term, compared to Alternative 1, monitoring and management actions to achieve or maintain the relevant VERP standards would reduce adverse impacts to soils in the river corridor.

Management actions associated with the redirection of visitors from floodplains and adjacent areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse.

The Merced River corridor in Alternative 2 for the El Portal segment is based on a quarter-mile wide boundary on both sides of the river. The zoning for this alternative provides the potential for much of the land north of the river (zoned for Park Operations and Administration [3C]) to be used for administrative purposes. Except for the Trailer Village/Abbieville area and a small area at the Murchison structures, which are zoned 3C, portions of the area south of the river is zoned for Day Use (2C) and Open Space (2A). In addition, under Alternative 2 the Sand Pit area west of the Murchison structures would be restored.

As with Alternative 1, future construction of administration facilities as allowed under this boundary and zoning could cause erosion of exposed soil. Temporary construction-related

erosion could occur during periods of rain, while soil is exposed, and prior to the site restoration and cleanup phases of the future projects. Erosion and soil loss typically occur immediately after initial site grading or following construction or a fill slope with exposed soil. Future construction activities could also result in soil disturbance, which represents a localized, minor, long-term, adverse impact to soils in El Portal in 3c zones. As described under Alternative 1, impacts associated with construction-period soil erosion and sedimentation would be mitigated through preparation and implementation of a stormwater pollution prevention plan. Therefore, erosion and soil loss associated with grading and construction activities would result in a local, short-term, minor, adverse impact. Long-term soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Therefore, compared to Alternative 1, Alternative 2 would have similar effects on soil erosion from future construction activities at the El Portal Administrative Site.

Day Use (2C) zoning south of the river suggests that management actions would facilitate user access, which could increase impacts on soils. However, any such management action would be implemented in such a manner to reduce adverse effects on soils. Implementation of the VERP program within the proposed El Portal boundary would ensure that management actions would achieve or maintain established standards with respect to trails, riverbank erosion, vegetation, and other indicators. Compared with Alternative 1, this would be a long-term, minor, beneficial impact.

Activities in the 2A zoned area south of the river would be very limited due to difficulty accessing this area, as well as the limited amount and types of activities allowed in this zone. As a result, impacts to soils in this area are expected to be negligible.

Summary of Alternative 2 Impacts. In the short term, impacts related to rockfall and seismic hazards would be unchanged from Alternative 1 because the number of users exposed to these hazards would be approximately the same. In the long term, fewer users would be exposed to rockfall hazards under Alternative 2 than under Alternative 1 due to slightly lower visitation levels. In the long term, slightly fewer visitors would be exposed to earthquakes and associated seismic hazards under Alternative 2; therefore, compared to Alternative 1, Alternative 2 would have a negligible, beneficial impact on public safety associated with seismic hazards. Compared to Alternative 1, Alternative 2 would have similar effects on soil erosion from future construction activities at the El Portal Administrative Site. However, efforts to protect biological and recreation ORVs through implementation of the interim limits with VERP program, including management actions taken to achieve the identified standards, would have a long-term, minor, beneficial impact on soil resources, especially in management zones supporting additional development. The combined adverse and beneficial impacts to soil resources, compared with Alternative 1, would be long term, minor, and beneficial.

Alternative 2 would continue to enhance and protect the identified geologic processes/conditions ORVs within the individual river segments.

Cumulative Impacts

The effects of the cumulative projects would be the same as those identified and described under Alternative 1. Although rockfalls and earthquakes are unpredictable and unavoidable by nature, rockfall and earthquake hazards under Alternative 2 and the cumulative projects would result in a local, long-term, minor, beneficial impact to public safety in Yosemite National Park and the El

Portal Administrative Site. The beneficial impact would be due to a slightly smaller increase in long-term visitation level, compared to Alternative 1 (thus exposing fewer visitors to rockfall and seismic hazards) and to efforts by the National Park Service to relocate critical facilities outside the talus and rockfall shadow zones, to avoid construction of new facilities in these hazard areas, and to conduct appropriate geotechnical studies prior to construction of facilities on soils susceptible to seismic ground shaking. The cumulative projects, in combination with Alternative 2, would result in a net regional, long-term, minor, beneficial impact on soil resources.

Impairment

Compared with Alternative 1, Alternative 2 would have a local, long-term, minor, beneficial impact on geologic resources and soils. Therefore, Alternative 2 would not impair geologic resources for future generations.

Hydrology, Floodplains, and Water Quality

Analysis

The following discussion provides an overview of the types of impacts to hydrology, floodplains, and water quality that could occur within each segment of the Merced River corridor under Alternative 2.

Management actions associated with the redirection of visitors from floodplains and adjacent areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse.

Impacts in Wilderness. The hydrologic processes ORVs in the Wilderness segments include the river's free-flowing character and excellent water quality. The ORV description also notes the river gradient, the natural conditions (glacial remnants, a logjam in Little Yosemite Valley), and numerous cascades. Of the qualities described in the ORV, most are relatively insensitive to user-related impacts, with the exception of water quality. Water quality in Wilderness segments is considered to be excellent.

User capacity within wilderness areas of Yosemite National Park is addressed through trailhead quotas and monitoring of wilderness resource conditions. Implementation of the VERP program for the wilderness areas would result in additional monitoring of indicators within wilderness areas. VERP indicators to be monitored in wilderness zones are listed in table II-5.

Indicators have been selected to provide overall information on the health of resources within the area. Information on the numbers of people recreating within the river corridor, and the River Protection Overlay in particular, can provide indirect information on the potential for increased erosion and sedimentation. Monitoring water quality would help determine the effects of visitor use in designated overnight areas on water quality. The water quality standard for this area includes nondegradation for fecal coliform (which must also meet the state standard for recreational contact), nutrients (compounds of nitrogen and phosphorous), and total petroleum hydrocarbons. If these water quality standards are not met, management actions would be

implemented to improve water quality parameters to a level that meets the established standard and protects and enhances this ORV.

The continued/ongoing removal of up to 3,000 gallons of water per day from the Merced River to support functions at the Merced Lake High Sierra Camp during the summer (when this camp is open to the public) represents a negligible impact to the river's hydrologic processes at or downstream of the point of withdrawal. This impact is negligible due to the small amount of water withdrawn on a daily basis, taking into consideration overall flow volumes of the river in this area.

Management actions taken in response to VERP monitoring data on water quality and levels of use within the river corridor and River Protection Overlay could range from less restrictive measures (visitor education efforts) to more restrictive measures (increased enforcement of existing regulations, restrictions on certain activities such as stock use, restrictions on the level of use, closure of certain areas). Educational efforts could include requiring visitors to view additional printed or video information prior to receiving a wilderness permit. More intensive measures could include increased law enforcement in wilderness areas to ensure that visitors comply with setbacks on campsites and other restrictions. Finally, the most restrictive measures could include limiting use through reduced wilderness trailhead quotas and closure of some areas. The park could also implement restoration of riparian vegetation in areas closed due to visitor-related impacts.

The impacts of the management actions as a result of implementing an interim limits with VERP program would vary depending on the action taken. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, and water pollution. Education efforts would be expected to result in local, short- and long-term, negligible to minor, beneficial impacts on hydrology and water quality. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects due to reduced trampling of vegetation by people and stock, reduced soil compaction, and reduced waste loads. These actions would be expected to result in local, long-term, minor to moderate, beneficial impacts on hydrology and water quality. Finally, measures taken to close and/or restore areas would be expected to result in local, long-term, minor to moderate, beneficial effects on water resources associated with restoration of vegetative cover, reduced soil compaction, and reduced erosion.

In wilderness areas, few structures are permitted to be constructed, and Alternative 2 would not affect the floodplain or its ability to accommodate flood flow.

Visitation to the Wilderness segments of the river corridor is seasonal in nature and is controlled through the park's trailhead quota system. There is some existing, unused capacity within this quota system, which would allow for slight increases in wilderness use in the future. Such use would not be allowed to exceed Wilderness trailhead quota limits or violate VERP standards under Alternative 2. As such, continued implementation of the park's Wilderness and Impact Monitoring System (WIMS), supplemented by the implementation of the VERP program, would have local, long-term, negligible to minor, beneficial impacts on hydrology, water quality, and the hydrologic processes ORV.

Impacts in Yosemite Valley. The hydrologic processes ORV in Yosemite Valley includes the river's meandering character, world-class waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes. Many of these qualities are insensitive to user-related impacts and instead

are more directly affected by development within the floodplain. User-related impacts could affect wetlands and other vegetation within the river corridor, which could result in the loss of vegetative cover and increased erosion and sedimentation. In addition, visitor use of the river and use of camping and parking areas near the river could result in increased water pollution through stormwater runoff and other means.

Indicators for the few areas zoned as Wilderness in Yosemite Valley would be the same as described above for wilderness areas.

Interim limits associated with this alternative would serve to keep use levels no higher than current levels, with the exception of camping and buses. This alternative will allow for an increase in 163 campsites and 92 buses per day. The VERP standard and indicators for various zones in the Valley are listed in table III-5. VERP indicators directed at hydrologic resources and water quality include riverbank erosion, parking capacity and water quality testing. Monitoring would provide a suite of data to help ensure that hydrologic processes ORVs are protected. If monitoring of the VERP indicators shows that standards for these indicators are not being met, management actions would be taken to remedy the situation. Management actions could include visitor education, restricting access to sensitive areas, restricting or limiting activities (swimming, picnicking, etc.) in specific areas, or construction of boardwalks to allow access to sensitive areas while protecting the natural resources. Management actions could also include visitor redirection, and the closure and restoration of areas adversely affected by trampling and erosion. Management actions could differ depending upon which zone(s) are affected. Management actions are more likely to restrict levels and types of visitor use in areas zoned Open Space (2A) because these areas are typically more sensitive to visitor impacts and are managed for lower visitor concentrations. Management actions taken to address standards in zones Day Use (2C) and Camping (3A), Visitor Base and Lodging (3B), and Park Operations and Administration (3C) could focus more on education and site hardening, as these areas have been identified as being appropriate for higher levels of visitor use.

The effects of these management actions in Yosemite Valley would vary by the action taken. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and water pollution are expected to result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures, such as limits on activities near the river or reduced activity levels, are also expected to reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate benefits to hydrology and water quality. Site-hardening activities, such as construction of boardwalks or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. The long-term effects associated with boardwalks is expected to be local, minor to moderate, and beneficial due to reduced trampling in sensitive vegetated areas and reduced impacts to surface and groundwater hydrology related to the creation of social trails, compacted soils, and trampled vegetation in riverside areas. Construction of picnic areas or other day-use facilities is also expected to reduce ongoing trampling and water pollution, but could have long-term effects related to soil compaction and vegetative losses. Thus, the long-term benefits of these facilities on water resources is expected to be negligible to minor. Floodplains and their ability to accommodate flood flows would not be substantively affected by most management actions. Construction of boardwalks or other day-use

facilities, which would be required to comply with floodplain guidance and the other elements of the Merced River Plan, would have local, long-term, negligible, adverse effects on floodplains.

Overall, Alternative 2 would prevent visitor use from adversely affecting ORVs. This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the Yosemite Valley segment. Impacts on floodplains would be negligible.

Impacts in the Gorge. The hydrologic processes ORV for the Gorge segment is related to the steep gradient of the river. The river in the Gorge is, in most places, difficult for visitors to safely access and has limited or no floodplain areas. This ORV is not readily susceptible to user-related impacts, and thus the river's gradients would be protected under Alternative 2.

Several indicators and standards have been developed that are associated with the hydrologic processes ORV (see table III-5), and monitoring would provide data to help ensure that this ORV is protected. The effects of VERP management actions within the Gorge segment would vary by the action taken. Educational measures would result in local, short- and long-term, negligible to minor, beneficial effects. If more restrictive measures were needed in the future, (such as limits on activities near the river or reduced activity levels), these would reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas would result in local, long-term, minor to moderate benefits to hydrology and water quality. Site-hardening activities would only be considered only within the small areas zoned Attraction (2D) or Park Operations and Administration (3C) and would have to comply with the other Merced River Plan elements. Within these small areas, site hardening such as construction of parking or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. These facilities would be located in areas designated for higher intensity uses and the long-term effects associated with site improvements is expected to be local, minor, and beneficial.

Overall, Alternative 2 is expected to have local, long-term, negligible to moderate, beneficial impacts on hydrology and water quality. Since the floodplain in the Gorge segment is very narrow and the hydrologic processes ORV for the segment is not readily susceptible to visitor use-related impacts, effects on floodplains are expected to be negligible, and there would be no change to the hydrologic processes ORV.

Impacts in El Portal. The hydrologic processes ORV for the El Portal segment is related to the seasonally continuous rapids in that segment. This ORV is not readily affected by the redrawing of the river corridor boundary, the zoning plan, or visitor use. Seasonally continuous rapids would continue to exist and be protected under Alternative 2.

Under this alternative, the quarter-mile river corridor on either side of the river, along with its management zone prescriptions, allows for a higher level of protection for this segment then that identified for Alternative 1, resulting in a long-term minor beneficial impact to the floodplain and the hydrologic processes ORV in this segment when compared to Alternative 1. This alternative includes 411 acres zoned for Park Operations and Administration (3C). This could result in a loss of vegetation, soil compaction and/or paving, the potential for increased erosion, and increased runoff from developed areas resulting in local, long-term, minor, adverse effects on hydrology and water quality. In addition, some development could occur within the floodplain, resulting in a local, long-term, minor, adverse effect on floodplain values. These minor adverse effects would be

minimized through careful site design; Best Management Practices to limit vegetation loss, soil compaction, and erosion; and implementation of appropriate stormwater treatment measures.

Implementation of VERP within this segment would include monitoring of various indicators for each zone, which would provide data on the current status of ORVs and help ensure their protection. Management actions to address standards being exceeded would differ between zones because areas zoned 2C are designated for day use (192 acres) and areas zoned 2A are designated for open space (250 acres). Areas zoned 3C (411 acres) are designated for higher intensity use that could include facilities associated with park operations and administration. Management actions to address noncompliance with established standards could include educational efforts for employees and visitors, restrictions on uses within the river, closure and restoration of areas, or construction of improvements such as boardwalks, day-use facilities, or stormwater treatment systems.

The effects of management actions would vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, is expected to reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term minor to moderate, benefits to hydrology and water quality. Site hardening would be considered within areas zoned 3C only. Site hardening, such as construction of parking or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. However, these facilities would be located in areas designated for higher intensity uses and would likely reduce the unofficial use of areas designated for less-intensive use. Therefore, the long-term effects associated with site improvements are expected to be local, minor, and beneficial. Effects on floodplains would primarily be related to construction activities within the floodplain. Since these activities would be expected to comply with floodplain requirements, effects on floodplains and the ability to accommodate flood flow is expected to be adverse but negligible.

Impacts in Wawona. The impoundment near Wawona is described as having excellent water quality, a hydrologic processes ORV. The Wawona segments themselves do not represent a hydrologic processes ORV, but the Below Wawona segment includes the free-flowing condition of the river and continual whitewater cascades, which are ORVs. These ORVs are not readily susceptible to impacts from visitors. The water quality element of the Impoundment segment is the most susceptible to user-related impacts. Under the VERP program, water quality would be monitored.

Typical management actions that might be taken under VERP have been described above. In general, the less restrictive measures would have short- and long-term, negligible to minor, beneficial impacts. More restrictive measures are expected to result in long-term, minor to moderate benefits. Management actions that include construction could have local, short-term, minor, adverse effects on hydrology and water quality and long-term, negligible, adverse effects on floodplains. These activities would be designed to reduce effects on sensitive areas within the segment, and thus would be expected to have long-term, minor, beneficial effects.

Overall, Alternative 2 is expected to have local, long-term, negligible to moderate benefits to hydrology, water quality, and the hydrologic processes ORV. Adverse effects to floodplains from any construction activities would be local, long term, and negligible.

Summary of Alternative 2 Impacts. Overall, implementation of the VERP program, based on the management zoning prescribed for the river corridor, would result in a long-term, minor, beneficial impact on hydrology, water quality, and hydrologic processes throughout the river corridor and a long-term, negligible, adverse effect on floodplains in the Valley and developed areas in Wawona and El Portal. This, coupled with existing park management policies and existing elements of the Merced River Plan, will help to ensure that the hydrologic processes ORVs would continue to be protected and enhanced on a segment-by-segment basis within the Merced River corridor.

Cumulative Impacts

The effects of the cumulative projects on hydrology, floodplains, and water quality would be the same as described under Alternative 1.

Overall, past, present, and reasonably foreseeable cumulative actions, in combination with Alternative 2, could have a long-term, minor, beneficial effect on hydrology, floodplains, and water quality in the Merced River corridor.

Impairment

Alternative 2 would result in long-term, minor, beneficial impacts to water quality, floodplain values, and hydrologic processes in the Merced River corridor. As a result, Alternative 2 would not impair the hydrologic resources of the park for future generations.

Wetlands

Analysis

The following discussion provides an overview of the types of impacts to wetland resources that could occur within each segment of the Merced River corridor under Alternative 2. Biological ORVs common to the entire Merced River (main stem and South Fork) include riverine habitats, such as riparian forests, meadows, and the aquatic environment. In the short term under Alternative 2, park use would generally continue consistent with existing conditions. In the long term, implementation of Alternative 2 could decrease visitor numbers compared to Alternative 1 due to the potential limitations on park access that could result from VERP monitoring and management actions.

Current park management tools, including the Merced River Plan management zoning and a variety of policies and guidelines pertaining to sensitive wetlands, provide mechanisms for implementing protective actions. Interim facilities limits (as described in Chapter III) would serve, for the most part, to manage user capacity at existing levels until the VERP program was fully implemented. Interim limits would, however, allow short-term growth in bus traffic, campground facilities, and employee housing, resulting in a potential for minor, adverse impacts on wetland resources in localized areas. Potential growth in bus traffic is expected to have a negligible to minor adverse effect on wetlands, because these visitors tend to focus use at site hardened areas, such as Yosemite Lodge and Lower Yosemite Falls.

Implementation of the VERP program would provide data on the condition of resources to guide future management decisions regarding visitor use. For example, monitoring might show that wetlands at specific locations (i.e., near facilities or other high-use areas such as trails) were being negatively affected by human or stock use, or through habitat fragmentation, local degradation of water quality or introduction, or the spread of invasive plant species. VERP monitoring could result in beneficial effects on wetland resources by, for example, localizing facility- and use-related impacts away from more sensitive areas or reducing user capacity limits.

Implementation of the VERP monitoring and management program would provide a powerful tool for systematically monitoring effects of visitor use on sensitive resources, adding a further level of protection that would not be available under Alternative 1.

If the park took management actions associated with the redirection of visitors from wetlands to other areas outside of the Merced River corridor there could be adverse effects on resources outside the corridor. However, visitors would be directed to areas better able to withstand the use and the redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse. If instead the park took action in response to VERP that decreased overall visitor numbers, there would not be new impacts to areas outside the corridor.

Impacts in Wilderness. As with Alternative 1, wilderness trailhead quotas would remain in place under Alternative 2. User capacity would be further limited under Alternative 2 by the prohibition of new campgrounds and trails under the interim facilities limits for wilderness areas until the VERP program was fully implemented. In addition to the existing wilderness monitoring program under Alternative 1, long-term implementation of the VERP program in Wilderness segments would provide additional resource-specific data on the condition of resources that would inform future management decisions. Some of the VERP indicators described in Chapter II have been selected to provide overall information on the health of wetland resources throughout the river corridor. If monitoring data showed that wetlands were being negatively affected by visitor use, then a wide range of management actions could be implemented to improve resource conditions to a level that would meet the established standards.

Management actions implemented in response to VERP monitoring data for wetland-related indicators could include educating visitors on the effects of riverbank erosion and social trails on riparian wetlands, closing and restoring wetlands along social trails, or temporarily or permanently closing highly degraded or sensitive areas for restoration or conservation. The number of visitors to a given area could be limited by reducing wilderness trailhead quotas or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational efforts, would likely result in local, long-term, negligible to minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas or restoring wetlands along social trails or eroded riverbanks would likely result in local, long-term, minor, beneficial effects on wilderness wetlands and the biological ORVs for the Wilderness segments of the Merced River.

Under Alternative 2, implementation of interim facilities limits and the VERP program within Wilderness segments, in combination with the wilderness trailhead quota system and application of the management elements adopted under the Merced River Plan would have an overall local, long-term, minor, beneficial effect on wetlands and the biological ORVs in Wilderness segments compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 2, user capacity in the Valley would be managed through interim facility limits until full implementation of the VERP program. The existing user capacity program elements described for Alternative 1 would also be used under this alternative. The interim facility limits would generally maintain park visitation at current levels. Exceptions in the Valley include a limit on tour buses that would be higher than the current average and a potential increase in campsites, which would still provide fewer campsites than existed prior to the January 1997 flood. Although a potential increase in tour buses and campground facilities could serve to bring more visitors into the park in the short term, the effects on wetland resources are expected to be negligible to minor and adverse. Increased camping facilities would have a negligible impact to wetlands, though the potential increase in visitors associated with the increased facilities could have a long-term, minor, adverse impact to wetlands in some meadow and floodplain areas. Moreover, the slight increase in visitation due to these increases would be limited to the short summer season when campgrounds are most occupied. Potential tour bus increases would likely have a negligible to minor impact on wetlands as these visitors typically use site-hardened areas, such as Yosemite Lodge and Lower Yosemite Falls; however, long term, minor adverse impacts could occur at areas such as El Capitan meadow, where tour buses stop for views of El Capitan. Compared to Alternative 1, implementation of the VERP program in the Valley would result in additional resource-specific monitoring. Management actions implemented in response to VERP monitoring are described in detail in Chapter III and could range from educating visitors to temporarily or permanently closing areas for restoration or conservation.

The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational efforts, would likely result in local, long-term, minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing areas or restoring wetlands along social trails or eroded riverbanks, are expected to result in local, long-term, moderate, beneficial effects on wetlands and the biological ORVs for the Valley segment. Alternative 2 would have an overall local, long-term, minor to moderate, beneficial effect on wetlands and the biological ORVs in the Valley compared to Alternative 1.

Impacts in the Gorge. As described above, user capacity in the Gorge segment would be managed through interim facility limits prior to full implementation of the VERP program. In the Gorge segment, interim limits would consist of maintaining parking at existing levels. This would have no impact on wetland resources compared to Alternative 1 in the short term.

The implementation of VERP monitoring in the Gorge segment would result in data on the condition of resources that would guide future management decisions. Impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses would likely result in local, long-term, negligible to minor, beneficial effects on wetland resources. Higher intensity management responses are expected to result in local, long-term, minor, beneficial effects on wetlands and the biological

ORVs for the Gorge segment. Alternative 2 would have an overall long-term, minor, beneficial effect on wetlands and the biological ORVs in the Gorge segment compared to Alternative 1

Impacts in El Portal. Under Alternative 2, user capacity for the El Portal segment would initially be managed through interim facility limits. These limits would restrict day parking to existing levels and prohibit new campgrounds or lodging in the El Portal area, thus limiting the potential for increases in use and providing a short-term, minor, beneficial impact on wetland resources. In the long term, a potential increase in visitors in this segment would likely be associated with river activities adjacent to Highway 140 and would result in a negligible impact to wetland resources.

Alternative 2 calls for a revised boundary for the El Portal segment of the river, based on a quarter mile on both sides of the river. A total of 853 acres are included within the zoned areas of the El Portal segment of the river corridor under Alternative 2. Implementation of this river corridor boundary is expected to have a minor, beneficial effect on wetland and the biological ORVs compared to the No Action Alternative, because the Merced River Plan management elements and user capacity program would apply to a greater area than that delineated in Alternative 1.

Under Alternative 2, management zoning for the El Portal segment would consist of Park Operations and Administration (3C) for areas north of the river as well as for existing developed areas south of the river (Murchison structures, Trailer Village/Abbieville), and Day Use (zone 2C) and Open Space (zone 2A) for undeveloped areas south of the river. This alternative provides for park administrative uses on 411 acres (48% of the total 853 acres) within the corridor. Day-use facilities and uses would be allowed on 192 acres and open space would be allowed on 250 acres. Under Alternative 2, Odger's Pond would also be zoned 2C, which would protect this sensitive wetland area. It should be noted that all ORVs must be protected regardless of the zoning designation and whether they are located within or outside of the river corridor boundary. Compared to Alternative 1, the zoning under this alternative is more protective of wetlands and other aspects of the biological ORV.

The implementation of VERP monitoring in the El Portal segment would result in data on the condition of resources that would guide future management decisions. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken, resulting in local, long-term, minor to moderate, beneficial effects on wetlands and the biological ORVs for the El Portal segment.

Although local, minor, adverse effects on wetlands could occur under this alternative, the wider boundary, restrictive zoning and the VERP program would protect wetland related ORVs on a segment-wide basis.

Impacts in Wawona. Interim facility limits for the Wawona area (as described in Chapter III) would essentially maintain existing user levels and thus have no impact on wetlands relative to Alternative 1. Implementation of VERP monitoring in the Wawona segments would guide future management decisions by providing information regarding the status of wetland resources as related to visitor use in this segment. Impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational signage or brochures, would likely result in local, long-term, minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing degraded or sensitive areas, would be expected to result in local, long-term, moderate, beneficial effects on wetlands and the biological ORVs for the

Wawona segments. Overall, Alternative 2 would have a long-term, minor to moderate, beneficial impact on wetlands and the biological ORVs in the Wawona segments.

Summary of Alternative 2 Impacts. In contrast to Alternative 1, the implementation of interim facility limits under Alternative 2 would provide short-term limits on park use until the VERP program could be implemented. Full implementation of VERP monitoring, with a suite of established indicators and standards, would provide important data, informing management planning and driving the implementation of management actions designed to protect wetland resources and the biological ORVs. The revised El Portal river corridor boundary would allow the application of these management elements to a much greater area than that described in Alternative 1 and the more restrictive zoning would limit development potential in certain areas as compared to Alternative 1. Overall, Alternative 2 would have local, short- and long-term, minor to moderate, beneficial effects on wetlands and the biological ORVs. In addition, compliance with existing park policies would help ensure that the biological ORVs related to wetlands are protected and enhanced.

Cumulative Impacts

The effects of past, present, and foreseeable future actions are the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wetlands and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 2, could have a net local, long-term, minor, beneficial effect on parkwide wetlands and the biological ORVs of the Merced River corridor.

Impairment

Alternative 2 would have local, short- and long-term, minor to moderate, beneficial effects on parkwide wetlands as well as the biological ORVs of the Merced River corridor and therefore would not impair wetland resources for future generations.

Vegetation

Analysis

The following discussion provides an overview of the types of impacts to vegetation resources that could occur within each segment of the Merced River corridor under Alternative 2. In the short term, park use would generally continue consistent with existing conditions. Interim facilities limits (as described in Chapter III) would serve, for the most part, to manage user capacity at existing levels until the interim limits with VERP program was fully implemented. Implementation of the VERP program would provide data on the condition of park resources to guide future management decisions regarding visitor use. For example, monitoring might show that vegetation at specific locations (i.e., near facilities or other high-use areas such as trails) was being negatively affected by human or stock use, or through habitat fragmentation, local degradation of water quality, or introduction or spread of noxious weeds. Without VERP management actions, impacts on vegetation in the vicinity of facilities and areas of concentrated use could be local, long term, and adverse. On the other hand, VERP monitoring could result in beneficial effects on vegetation resources by, for example, localizing facility- and use-related impacts away from more sensitive areas or reducing user capacity limits.

Current park management tools, including the Merced River Plan management zoning and a variety of policies and guidelines pertaining to sensitive plant communities, provide mechanisms

for implementing protective actions. However, implementation of the interim limits with VERP program would provide a powerful tool for systematically monitoring effects of visitor use on sensitive resources, adding a further level of protection that would not be available under Alternative 1.

Management actions associated with the redirection of visitors from areas with sensitive vegetation and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 2, the interim facility limits would include the prohibition of new campgrounds and trails in Wilderness segments VERP program. Compared to Alternative 1, implementation of interim limits and the VERP program in wilderness areas would result in additional resource-specific monitoring, providing additional data on the condition of resources and the visitor experience that would inform future management decisions. VERP indicators have been selected to provide overall information on the health of resources throughout the river corridor. If monitoring data showed that vegetation resources were being negatively affected by visitor use, then a wide range of management actions could be implemented to improve resource conditions to a level that would meet the established standard.

Management actions implemented in response to VERP monitoring for the indicators could range from educating visitors on the effects of riverbank erosion, to closing and restoring vegetation on social trails, to temporarily (or permanently) closing highly degraded or sensitive areas for restoration or conservation. In addition, the number of visitors in a given area could be limited by reducing trailhead quotas or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of the interim limits with VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational efforts, would likely result in local, long-term, negligible to minor, beneficial effects on vegetation resources. Higher intensity management responses, such as restoring vegetation to social trails or eroded riverbanks, would likely result in local, long-term, minor, beneficial effects on wilderness vegetation and the biological ORVs in the Wilderness segments of the Merced River corridor.

Under Alternative 2, implementation of interim facility limits and the VERP program, and the continued application of the wilderness quotas, WIMS and the management elements adopted under the Merced River Plan, would have an overall local, long-term, minor, beneficial effect on native vegetation and the biological ORVs in Wilderness segments compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 2, user capacity in the Valley would be managed through interim facility limits until full implementation of the VERP program. These limits would generally maintain park visitation at current levels. Exceptions in the Valley include a limit on tour buses that is higher than the current average and a potential increase in campsites, which would still provide fewer campsites than existed prior to the January 1997 flood. VERP program Although a potential increase in tour buses and campground facilities could bring more visitors

into the park in the short term, the effects on vegetation would be negligible to minor and adverse. Increased camping facilities could cause minor, long-term adverse impacts to vegetation, though site placement would help to mitigate this impact. Potential tour bus increases would likely have a negligible to minor impact on vegetation, as these visitors typically focus use on site-hardened areas such as Yosemite Lodge and Lower Yosemite Falls; however, minor adverse impacts to meadow vegetation could occur in the El Capitan meadow area, where tour buses stop for views of El Capitan. Compared to Alternative 1, implementation of the VERP program in the Valley would result in additional resource-specific monitoring.

Management actions implemented in response to VERP monitoring are described in detail in Chapter II and could range from educating visitors to temporarily or permanently closing highly degraded or sensitive areas for restoration or conservation. In addition, visitor use could be limited by establishing entrance station limits or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational efforts, would likely result in local, long-term, minor, beneficial effects on vegetation resources. Higher intensity management responses, such as restoring vegetation to social trails or eroded riverbanks, are expected to result in local, long-term, moderate, beneficial effects on vegetation and the biological ORVs in the Valley. Alternative 2 would have an overall local, long-term, minor to moderate, beneficial effect on native vegetation and the biological ORVs in the Valley segment compared to Alternative 1.

Impacts in the Gorge. As described above, user capacity in the Gorge segment would be managed through interim facility limits prior to implementation of the VERP program. Interim limits would consist of maintaining parking at existing levels. This would have no effect on vegetation resources compared to Alternative 1.

The implementation of VERP monitoring in the Gorge segment would result in data on the condition of resources that would guide future management decisions regarding vegetation and biologic ORVs in this segment. Impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such educational efforts, would likely result in local, long-term, negligible to minor, beneficial effects on vegetation resources. Higher intensity management responses are expected to result in local, long-term, minor, beneficial effects on vegetation and the biological ORVs in the Gorge segment. Alternative 2 would have an overall long-term, minor, beneficial effect on native vegetation and the biological ORVs in the Gorge segment compared to Alternative 1.

Impacts in El Portal. In the short term, user capacity for the El Portal segment would be managed through interim facility limits. These limits would maintain day-visitor parking at existing levels and prohibit new campgrounds or housing in the El Portal area, thus limiting the potential for increases in use and providing a minor, beneficial impact on vegetation resources compared to Alternative 1. In the long-term, a potential increase in visitors in this segment would likely be associated with river activities adjacent to Highway 140 and result in a negligible impact to vegetation.

Alternative 2 calls for a quarter-mile boundary on both sides of the river for the El Portal segment. A total of 853 acres are included within the El Portal segment of the river corridor under

Alternative 2. Compared to the No Action Alternative, implementation of this river corridor boundary is expected to have a minor, beneficial effect on vegetation and the biological ORVs because the management elements and VERP program would apply to a greater area under Alternative 2 than under Alternative 1.

Under Alternative 2, management zoning for the El Portal segment would consist primarily of Park Operations and Administration (3C) for areas north of the river and for existing developed areas south of the river (Murchison structures, Trailer Village/Abbieville), and Day Use (2C) for undeveloped areas south of the river. On the north side of the river, specific known ORVs would be protected through 2C zoning. This alternative provides for park administrative uses on 411 acres (48% of the total 853 acres) within the corridor. Day-use facilities and uses would be allowed on 192 acres, and 250 acres would be designated as open space. Compared to Alternative 1, the zoning under this alternative is more protective of vegetation and biologic ORVs.

The implementation of VERP monitoring in El Portal would result in data on the condition of vegetation resources that would guide future management decisions in this segment. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken, resulting in local, long-term, minor to moderate, beneficial effects on vegetation and the biological ORVs for the El Portal segment.

Although local, moderate, adverse effects on native vegetation could occur as the result of future development (e.g., new employee housing, road repair) vegetation and biologic ORVs would be protected on a segment-wide basis. The more restrictive zoning under this alternative (as compared to Alternative 1), the wider river corridor, and the VERP program would all serve to protect vegetative resources in parts of the El Portal area.

The revised El Portal river corridor boundary under Alternative 2 is expected to have a local, long-term, minor, beneficial effect on vegetation resources in the El Portal segment compared to Alternative 1. Alternative 2 would have an overall local, long-term, minor, beneficial effect on native vegetation and the biological ORVs in the El Portal segment compared to Alternative 1.

Impacts in Wawona. Interim facility limits for the Wawona area (described in Chapter III) would essentially maintain existing use levels and thus have no impact on vegetation resources relative to Alternative 1. Implementation of VERP monitoring in the Wawona segments would guide future management decisions. Impacts of management actions as a result of VERP monitoring would vary depending on the type of action taken. Low-intensity management responses, such as educational signage or brochures, would likely result in local, long-term, minor, beneficial effects on vegetation. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas, would be expected to result in local, long-term, moderate, beneficial effects on vegetation and the biological ORVs in the Wawona segments. Overall, Alternative 2 would have a long-term, minor to moderate, beneficial impact on vegetation and the biological ORVs in the Wawona segments.

Summary of Alternative 2 Impacts. In contrast to Alternative 1, implementation of interim facility limits under Alternative 2 would provide short-term limits on park use until the VERP program could be implemented. Full implementation of VERP monitoring, with a suite of established indicators and standards, would provide important data to inform management planning and drive management actions designed to protect vegetation resources and the biological ORVs. The revised El Portal river corridor boundary would allow management elements to be applied to a

much greater area than that described for Alternative 1 and more restrictive zoning would limit locations for development as compared to Alternative 1. Overall, Alternative 2 would have local, short- and long-term, minor to moderate, beneficial effects on vegetation and the biological ORVs. Compliance with existing park policies would help ensure that the biological ORVs related to vegetation are protected and enhanced.

Cumulative Impacts

Cumulative effects to vegetation would be the same as described under Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on vegetation and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 2, could have a net local, long-term, minor, beneficial effect on parkwide vegetation and the biological ORVs of the Merced River corridor.

Impairment

Alternative 2 would have local, short- and long-term, minor to moderate, beneficial effects on parkwide vegetation and the biological ORVs of the Merced River corridor and therefore would not impair vegetation resources for future generations.

Wildlife

Analysis

The following discussion provides an overview of the types of impacts to wildlife resources that could occur within each segment of the Merced River corridor under Alternative 2. In the short term under Alternative 2, visitor numbers are expected to be similar to those under Alternative 1. Short-term, minor, adverse effects to wildlife could occur in localized areas through implementation of interim visitor and employee use limits that would allow some growth in bus traffic, campsites, and employee housing. However, long-term, beneficial impacts to wildlife would occur through implementation of VERP monitoring and subsequent management actions that would maintain use of the park at a level that would protect wildlife resources and the biological ORVs.

Management actions associated with the redirection of visitors from areas with sensitive wildlife habitat and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 2, interim limits would not allow for any increase in back-country facilities in Little Yosemite Valley on the Merced Lake High Sierra Camp, or in more remote wilderness portions of the river corridor. Under Alternative 2, user capacity within Wilderness segments of the Merced River would continue to be addressed through trailhead quotas and the monitoring of resources conditions, as under Alternative 1. Alternative 2 would include implementation of the interim limits and the VERP program, resulting in additional resource-specific monitoring of indicators within wilderness areas over the long term. VERP indicators relevant to wildlife that will be monitored in wilderness zones are discussed in Chapter II.

Existing wilderness quotas based on resource protection goals currently restrict the number of overnight users on both established trails and cross-country routes in wilderness areas. These quotas would remain in place and, together with WIMS monitoring, would allow the park to prevent degradation of wildlife values in wilderness segments of the river. Implementation of VERP monitoring would provide additional data on wildlife resources. Management actions taken in response to VERP monitoring of wildlife indicators could range from less restrictive measures (e.g., visitor education efforts) to more restrictive measures (e.g., increased enforcement of existing regulations, restrictions on certain activities such as stock use, and restrictions on the level of use or closure of certain areas). Educational efforts could include requiring visitors to view printed or video information prior to receiving a wilderness permit. More intensive measures could include increased law enforcement in wilderness areas to ensure that visitors comply with setbacks on campsites and other restrictions. Finally, the most restrictive measures could include reducing wilderness use by reducing trailhead quotas in some areas. Park management could also implement restoration of riparian vegetation if areas needed to be closed due to visitor-related impacts.

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced trailhead quotas, and closure of areas would likely result in local, short- and long-term, minor, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Due to the seasonal nature of visitation to Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the park's existing trailhead quota system, implementation of interim limits and the VERP program is expected to have local, short- and long-term, negligible to minor, beneficial impacts to wildlife resources and the biological ORVs in Wilderness segments.

Impacts in Yosemite Valley. Alternative 2 would include implementation of interim limits and the VERP program, resulting in additional resource-specific monitoring of indicators within Yosemite Valley. Wildlife-related VERP indicators to be monitored in Yosemite Valley are discussed in Chapter II.

Under Alternative 2, local, short-term, minor, adverse effects to wildlife resources and the biological ORVs could occur through implementation of interim visitor and employee use limits that would allow some growth in bus traffic, campsites, and employee housing. These effects could include increased opportunities for wildlife exposure to food; a potential for an increase in erosion; trampling; and other disturbances to wildlife habitat and wildlife within the Merced River corridor. However, any additional campsites would be located in areas within the Valley where existing habitat values are low. Potential tour bus increases would likely have a negligible to minor impact on wildlife, as these visitors typically use site-hardened areas such as Yosemite Lodge and Lower Yosemite Falls. Because wildlife values will remain unchanged in most of the Valley segment in the short-term, wildlife-related ORVs will be protected and enhanced on a segment-wide basis.

In the long-term, moderate, beneficial impacts to wildlife would occur through implementation of VERP monitoring and subsequent management actions that would maintain use in the park at a level that would protect wildlife resources and the biological ORVs.

Management actions taken in response to VERP monitoring on biological indicators could range from less restrictive measures (e.g., visitor education efforts) to more restrictive measures (e.g., increased ranger patrols, and restrictions on the level of use or closure of certain areas). Education efforts could include printed or video information and interpretive signs. More intensive measures could include increasing enforcement to ensure that visitors comply with trail restrictions or reducing use by closing some areas. Park management could also restore riparian vegetation in any areas that needed to be closed due to future visitor-related impacts.

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education would likely reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Increased enforcement of food storage restrictions and closure of areas is expected to result in local, short- and long-term, minor to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Alternative 2 would implement a series of interim limits, a comprehensive VERP program, and all of the existing user capacity program measures. Alternative 2 would prevent visitor impacts from degrading ORVs. Overall, Alternative 2 would result in a net local, short- and long-term, minor, beneficial effects on wildlife.

Impacts in the Gorge. Under Alternative 2, interim limits would not allow for any increase in parking, visitor services or park facilities above current levels. In the long-term, the implementation of VERP monitoring in the Gorge segment would result in data on the condition of wildlife resources that would guide future decisions regarding wildlife resources. The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts to wildlife by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols and closures of areas would be expected to result in local, short- and long-term, minor to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Overall, the existing Merced River Plan elements and the VERP monitoring and management program would prevent visitor impacts from adversely affecting ORVs and result in a local, short- and long-term, minor to moderate, beneficial effect on native wildlife and the biological ORVs within the Gorge.

Impacts in El Portal. Under Alternative 2, the Wild and Scenic River boundary includes the ORVs within one quarter-mile of the river within the El Portal Administrative Site. Alternative 2 designates lower intensity Day Use (2C) and Open Space (2A) zoning for the majority of the area

south of the river and higher intensity Park Operations and Administration (3C) zoning in the vicinity of existing development areas and on other potentially developable sites. This zoning is more restrictive of development than the zoning in Alternative 1.

Examples of how management zoning would affect native wildlife and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. vegetation such as the host plant for the Valley elderberry longhorn beetle, as well as a recently identified population of Congdon's wooly sunflower exist at this site. Under its 2C zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species. This could result in a local, minor to moderate, beneficial effect on this ORV.
- Portions of El Portal are zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development or redevelopment (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Most areas zoned 3C are already developed to support park operations and wildlife habitat in these areas has already been impacted. Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), adverse effects on native wildlife. Although application of mitigation measures would reduce impacts, long-term, minor to moderate, adverse effects to native wildlife (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain in these portions of the El Portal segment.
- The revised river corridor boundary would increase the area included in the corridor from 193 acres to 853 acres. Though 411 acres would be zoned 3C, allowing development or redevelopment of park operations and administration facilities, this development would be primarily concentrated in the vicinity of existing development. Designation of 192 acres of habitat zoned 2C and 250 acres zoned 2A would limit the development intensity in these regions, resulting in a local, long-term, minor, beneficial effect on wildlife resources and the biological ORVs.

Under Alternative 2, interim limits would not allow for any increase in parking or visitor services above current levels. In the long-term, the addition of the VERP program would result in monitoring of relevant wildlife indicators in El Portal and data on the conditions of wildlife resources that would guide future management decisions. The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address user-related impacts on wildlife resources. Management actions such as education would be expected to reduce impacts by changing human behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of food storage restrictions, and closure of areas would likely result in local, short- and long-term, moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

The application of management zoning and other Merced River Plan elements, together with VERP monitoring and management actions would protect and enhance wildlife and the biological ORVs in El Portal. Although the zoning in El Portal allows for road repair as well as additional development of employee housing and park administration facilities, which could have short- and long-term, adverse effects on native wildlife, areas zoned 3C are mostly developed and are of

marginal benefit to wildlife. Overall, the application of a wider river boundary, more restrictive management zoning, and the VERP program within El Portal would have a local, short- and long-term, minor, beneficial effect on native wildlife and the biological ORVs.

Impacts in Wawona. Under Alternative 2, interim limits would not allow for any increase in parking, visitor services, or any additional park facilities above current levels. Alternative 2 would include implementation of interim limits and the VERP program. Full implementation of the VERP program would result in resource specific monitoring of wildlife indicators. The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, negligible to minor, beneficial impact. Increased ranger patrols, increased enforcement of food storage restrictions, and closure of areas are expected to result in local, short- and long-term, minor, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

If the park implemented management actions associated with the redirection of visitors from areas with sensitive wildlife habitat to other areas outside of the Merced River corridor, there could be an adverse effect on resources outside the corridor. However, visitors would be directed to areas better able to withstand use and the redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse. If the park instead took management action in response to VERP monitoring that decreased overall visitor numbers, there would be no new impacts from visitor use.

Overall, Alternative 2 would have a local, short- and long-term, minor, beneficial impact on native wildlife and the biological ORVs of Wawona.

Summary of Alternative 2 Impacts. Overall, the user capacity limits and the VERP monitoring and management program would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. The continued use of the Wilderness Quota system and WIMS would further protect wildlife and biologic ORVs in the Wild river segments. The revised river corridor boundary at El Portal includes the biological ORVs within a quarter-mile of the river and includes restrictive zoning, resulting in beneficial effects on wildlife resources. Alternative 2 would result in a local, short- and long-term, minor to moderate, beneficial impact on native wildlife and the biological ORVs within the river corridor. Compliance with existing park policies would help ensure that the biological ORVs related to wildlife are protected and enhanced.

Cumulative Impacts

Cumulative effects to wildlife from past, present, and foreseeable future actions are the same as described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wildlife and the biological ORVs within the Merced River corridor. Overall, these cumulative

actions, in combination with Alternative 2, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife and the biological ORVs of the Merced River corridor.

Impairment

Alternative 2 would have a local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife as well as the biological ORVs of the Merced River corridor and therefore would not impair wildlife resources for future generations.

Rare, Threatened, and Endangered Species

Analysis

The following discussion provides an overview of the types of impacts to rare, threatened, and endangered species that could occur within each segment of the Merced River corridor under Alternative 2. In the short term under Alternative 2, visitor numbers are expected to be similar to those under Alternative 1. In the long term, however, visitor numbers would likely be lower than under Alternative 1 due to VERP monitoring and potential management actions that could limit the number of park visitors within the planning corridor. Short-term, adverse effects to special-status species could occur through implementation of interim visitor and employee use limits that would allow some growth in bus traffic, campsites, and employee housing. However, long-term, beneficial impacts to special-status species would occur through implementation of VERP monitoring and subsequent management actions that would maintain use of the park at a level that would protect rare, threatened, and endangered species and the biological ORVs. If the park implemented management actions associated with the redirection of visitors from areas with known rare, threatened and endangered species to other areas outside of the Merced River corridor, there could be an adverse effect on resources outside the corridor. However, visitors would be redirected to areas better able to withstand use and the redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term and variable in location. Therefore, potential impacts to resources in other areas of the park as a result of redirection are expected to be negligible to minor, and adverse. If the park instead took management action in response to VERP monitoring that decreased overall visitor numbers, there would be no new impacts from visitor use.

A Biological Assessment was presented to the U.S. Fish and Wildlife Service in compliance with Section 7 of the Federal Endangered Species Act in January 2000. A revised Biological Assessment, based on the *Merced River Plan/FEIS,* was submitted to the U.S. Fish and Wildlife Service in June 2000. In July 2000, the National Park Service received a letter from the U.S. Fish and Wildlife Service concurring with the determination that the Merced River Plan would not adversely affect special-status species. Furthermore, revisions to the Merced River Plan to address user capacity and correct the river boundary in El Portal would not result in adverse effects on rare, threatened, and endangered species. The National Park Service will restate its assessment of special -status species issues and submit a letter to the U.S. Fish and Wildlife Service for review. The letter will request U.S. Fish and Wildlife Service concurrence with the determination that the Revised Merced River Plan would not adversely affect rare, threatened, and endangered species.

An overriding assumption of the Biological Assessment and U.S. Fish and Wildlife Service letter of concurrence was that each site-specific action that could occur under the Merced River Plan

would be analyzed as required by NEPA and the Endangered Species Act, and that all federal laws would be complied with during implementation. Since the alternatives analyzed in this document are programmatic, specific commitments of resources are not discussed. Therefore, a Biological Evaluation and/or Biological Assessment would be prepared for all site-specific projects, as warranted. Some site-specific projects would have the potential to adversely affect rare, threatened, or endangered species. Therefore, site- and project-specific assessments and determinations, in accordance with the provisions of the Endangered Species Act and in cooperation with the U.S. Fish and Wildlife Service, would be required for future actions.

Impacts in Wilderness. Under Alternative 2, interim limits would not allow for any increase in back-country facilities in Little Yosemite Valley on the Merced Lake High Sierra Camp, or in more remote wilderness portions of the river corridor. User capacity within Wilderness segments of the Merced River would continue to be addressed through trailhead quotas and monitoring of wilderness resources conditions. Alternative 2 would also include the implementation of interim limits and the VERP program, resulting in additional resource-specific monitoring of indicators within wilderness areas. VERP indicators to be monitored in wilderness zones are discussed in Chapter II.

Existing user quotas based on resource protection goals currently restrict the number of overnight users on both established trails and cross-country routes in wilderness areas. These quotas would remain in place and, together with WIMS monitoring, would allow the park to prevent degradation to high-elevation meadows (a habitat for rare, threatened and endangered species) and biological ORVS is Wilderness sections of the river. Management actions taken in response to VERP monitoring of rare, threatened, and endangered species indicators could range from softer measures (e.g., visitor education efforts) to more restrictive measures (e.g., increased enforcement of existing regulations, restrictions on certain activities such as stock use, and restrictions on the level of use or closure of certain areas). Enforcement of trailhead quotas could also be increased. More intensive measures could include increased law enforcement in wilderness areas to ensure that visitors comply with setbacks on campsites and other restrictions. Finally, the most restrictive measures could include reducing visitor use in wilderness areas by reducing trailhead quotas or closing some areas. Park management could also restore riparian vegetation if areas were closed due to visitor-related impacts.

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced trailhead quotas, and closure of areas would likely result in local, short- and long-term, minor, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance.

Due to the seasonal nature of visitation to Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the park's trailhead quota system, implementation of interim limits and the VERP program is expected to have local, short- and long-term, negligible to minor, beneficial impacts to rare, threatened, and endangered species and the biological ORVs in wilderness areas.

Impacts in Yosemite Valley. Alternative 2 would include implementation of interim limits and the VERP program, resulting in additional resource-specific monitoring of indicators within Yosemite Valley. VERP indicators for rare, threatened, and endangered species that would be monitored in Yosemite Valley are discussed in Chapter II.

Management actions taken in response to VERP monitoring of biological indicators could range from softer measures (e.g., visitor education efforts) to more restrictive measures (e.g., increased ranger patrols and restrictions on the level of use or closure of certain areas). Educational efforts could include printed or video information and interpretive signs. More intensive measures could include increasing enforcement to ensure that visitors comply with trail restrictions and reducing use by closing some areas. Park management could also restore riparian vegetation in areas due to visitor-related impacts.

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would likely reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local short- and long-term, minor, beneficial impact. Increased enforcement of food storage restrictions and closure of areas is expected to result in local, short- and long-term, minor to moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Under Alternative 2, short-term, minor to moderate, adverse effects to special-status species and the biological ORVs could occur through implementation of interim visitor and employee use limits that would allow some growth in bus traffic, campsites, and employee housing. These effects could include increased opportunities for trampling, erosion, noise, and other disturbances to special-status species and their habitats within the Merced River corridor, potentially resulting in minor adverse impacts to rare, threatened and endangered species. Potential tour bus increases would have a negligible to minor impact on rare, threatened and endangered species, as these visitors typically use site-hardened areas such as parking and adjacent roadside areas; an increase in these types of visitors could result in minor impacts on rare, threatened and endangered species. However, long-term, moderate, beneficial impacts to rare, threatened, and endangered species would occur through implementation of VERP monitoring and subsequent management actions that would maintain use in the park at a level that would protect rare, threatened, and endangered species and the biological ORVs.

Alternative 2 would include implementation of the existing Merced River Plan elements, existing user capacity measures and VERP monitoring and management actions. These would prevent visitor impacts from adversely affecting the biological ORVs. Alternative 2 would provide protection for rare, threatened, and endangered species and related biological ORVs in Yosemite Valley and would result in a net local, short-and long-term, moderate, beneficial effect.

Impacts in the Gorge. Under Alternative 2, interim limits would not allow for any increase in parking or other visitor services above current levels. Over the long-term, the implementation of VERP monitoring in the Gorge segment would result in data on the condition of special-status species that would guide future resource management and visitor experience decisions. The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-

related impacts on rare, threatened, and endangered species. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of trail restrictions, and closure of areas also is expected to result in local, short- and long-term, minor to moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Overall, implementation of the VERP program and resulting management actions would prevent visitor impacts from adversely affecting the biological ORVs and result in a local, short- and long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Gorge segment.

Impacts in El Portal. Under Alternative 2, the river corridor boundary within El Portal includes the biological ORVs within a quarter-mile on either side of the Merced River within the El Portal Administrative Site. Alternative 2 designates lower intensity Day Use (2C) and Open Space (2A) zoning for the majority of the area south of the river and higher intensity Park Operations and Administration (3C) zoning in the vicinity of existing development areas and on other potentially developable sites. This zoning is more restrictive of development than Alternative 1.

Examples of how management zoning would affect rare, threatened, and endangered species and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Riparian vegetation, such as the host plant for the Valley elderberry longhorn beetle (blue elderberry), as well as the recently identified population of Congdon's wooly sunflower exist at the site. Under Day Use (2C) zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, minor to moderate, beneficial effect on this ORV.
- Portions of El Portal are zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development or redevelopment (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Most areas zoned 3C are already developed and habitat values in these areas have already been impacted. Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on rare, threatened, and endangered species. Although application of mitigation measures would reduce impacts, long-term, minor to moderate, adverse effects to rare, threatened, and endangered species (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.
- The revised river corridor boundary would increase the area included in the river corridor from 193 acres to 853 acres. Though 411 acres of habitat would be zoned 3C, allowing development or redevelopment of park operations and administration facilities, this development would be primarily concentrated in the vicinity of existing development. Designation of 192 acres of habitat zoned 2C and 250 acres zoned 2A (encompassing the majority of biological ORVs south of the river and in some areas north of the river that potentially support rare, threatened, and endangered species, such as Valley elderberry longhorn beetle, Tompkin's sedge, and Congdon's wooly sunflower) would limit the development intensity in these regions, resulting in a local, long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

The addition of the VERP program would result in the monitoring of biological indicators in El Portal and data on the conditions of special-status species that would guide future resource management and visitor-use management decisions. The impacts of management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address user-related impacts on rare, threatened, and endangered species. Management actions such as education are expected to reduce impacts by changing human behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor, beneficial impact. Restricted access to recreation areas and area closure would likely result in local, short- and long-term, moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Although the zoning in El Portal allows for road repair as well as additional development of park administration facilities and employee housing, which could have short- and long-term, adverse effects to rare, threatened, and endangered species, areas zoned 3C are mostly developed and of marginal benefit to sensitive species. Overall, the application of an increased river boundary, more restrictive management zoning, and VERP monitoring and management actions within El Portal would have a local, short- and long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

Impacts in Wawona. Under Alternative 2, interim limits would not allow for any increase in parking, visitor services, or any additional park facilities above current levels. In the long term, Alternative 2 would include implementation of interim limits and the VERP program, resulting in the monitoring of special-status species indicators within the Wawona segments. The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, negligible to minor, beneficial impact. Increased ranger patrols, increased enforcement of food storage restrictions, and closure of areas is expected to result in local, short- and long-term, minor, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Overall, Alternative 2 would have a local, short- and long-term, minor, beneficial impact on rare, threatened, and endangered species and the biological ORVs of Wawona.

Summary of Alternative 2 Impacts. Overall, implementation of interim facility limits, VERP monitoring and management actions, and the revised river corridor boundary and management zoning in El Portal would allow natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. These measures would be in addition to the user capacity measures from Alternative 1, including Wilderness trailhead quotas. The revised river corridor boundary at El Portal includes biological and river-related ORVs within a quarter-mile of the river, resulting in a beneficial effect on rare, threatened, and endangered species. Alternative 2 would result in a local, short- and long-term, minor to moderate, beneficial impact on rare, threatened, and endangered species and the biological ORVs within the river corridor. Additionally, compliance with existing park policies and federal regulations such as the

Endangered Species Act would help ensure that the biological ORVs in each river segment are protected and enhanced.

Cumulative Impacts

Cumulative effects to rare, threatened, and endangered species from past, present, and future foreseeable actions are the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 2, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor.

Impairment

Alternative 2 would have a local, short- and long-term, minor to moderate, beneficial effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor and therefore would not impair these resources for future generations.

Air Quality

Analysis

The following discussion provides an overview of the types of impacts to air quality that could occur within each segment of the Merced River corridor associated with Alternative 2.

In general, under Alternative 2 air quality in the river corridor would continue to be influenced by local sources within the park and by regional sources upwind of the park, and would continue to be subject to emissions trends similar to those described under Alternative 1.

The main differences between air quality conditions under Alternative 2 and those under Alternative 1 would relate to the following issues: implementation of a VERP program; interim limits on the number of commercial tour buses allowed into Yosemite Valley; and the construction or demolition activities and long-term impacts on air quality that could occur as a result of the change in management zoning resulting from adoption of a revised river corridor boundary in the El Portal segment of the river corridor.

Impacts in Wilderness. User capacity within wilderness areas of Yosemite National Park is currently addressed through a trailhead quota system and monitoring of wilderness resource conditions. Under Alternative 2, use of trails in wilderness areas would continue consistent with Alternative 1.

Implementation of the VERP program for Wilderness segments would result in additional monitoring of indicators within wilderness areas. The indicators do not address conditions specific to air quality. If the standards for these indicators were not met, then management actions would be required.

Management actions in response to VERP monitoring could range from softer measures (visitor education efforts) to more restrictive measures (increased enforcement of existing regulations, restrictions on certain activities [such as stock use], and restrictions on level of use [closure of certain areas]). Educational efforts could include printed or video information required to be

viewed and acknowledged prior to visitors receiving a wilderness permit. The most restrictive measures could include reducing visitor use through reduced wilderness trailhead quotas and closure of some areas.

The impacts of the management actions as a result of VERP monitoring would vary depending on the action. Management actions such as visitor education would be expected to have little or no effect on air quality in wilderness areas. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects by reducing the number of people recreating within the river corridor. These more restrictive measures could result in fewer people using wilderness areas and could indirectly result in fewer vehicle trips (and vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions in other areas of the park. On this basis, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Overall, Wilderness segments of the river corridor would continue to be largely free of effects from local emissions sources (with the exception of prescribed fires), but would be subject to regionwide emissions trends. Overall, Alternative 2 is expected to prevent visitor use from adversely affecting ORVs. With respect to ozone and particulate matter, implementation of the VERP program would be expected to have a local, long-term, negligible, beneficial impact on air quality in Wilderness segments relative to Alternative 1.

Impacts in Yosemite Valley. Like Alternative 1, under Alternative 2 air quality in the Valley segment of the river corridor would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in Valley areas. Emissions from local stationary, area, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1.

In the short term, visitor levels and associated traffic in the Valley would remain approximately the same as existing levels, similar to Alternative 1. With the exception of housing, buses, and campground sites, interim facility limits would be capped at existing levels. An increase in tour buses over current levels would incrementally contribute to air emissions in those areas of Yosemite Valley frequented by buses. This increase would result in a local, short-term, minor adverse effect on air quality. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 as a result of VERP monitoring and management.

Implementation of the VERP program and other features of Alternative 2 could have an indirect beneficial impact on air quality in Yosemite Valley. For example, the interim limits on the number of commercial tour buses allowed into the Valley that would be implemented to address traffic congestion could also reduce criteria air pollutant emission levels in the Valley relative to Alternative 1 in the short term.

VERP indicators do not directly address conditions specific to air quality; however, monitoring of congestion on major park roads indirectly addresses localized air quality in congested areas. The standard for level of congestion on major park roads would be that the number of vehicles in any activity area be no greater than the number of endorsed parking spaces. If the standards set for level of congestion on major park roads or other standards and indicators were not met, management actions would be required to remedy the situation.

Management actions could range from increased visitor education, to reducing infrastructure (parking, picnic areas, etc.), to further limiting the number of day-use commercial bus permits (including YARTS) or number of cars allowed in the Valley, to construction of facilities (boardwalks, platforms, trails) to allow access to sensitive areas while protecting the natural resources, to restrictions on level of use (closure of certain areas). Management actions would likely differ depending on which zone(s) would be affected. Management actions would more likely be restrictive of levels and types of visitor use in wilderness areas and zones 2A and 2B, as these areas are typically more sensitive to visitor impacts and are managed for lower visitor concentrations. Management actions taken to address standards in areas zoned 2C, 2D, and Developed would likely focus more on education, site hardening, and other management actions that continue to allow for visitor use, because these areas have been identified as being appropriate for higher levels of visitor use.

The effects of management actions would vary by the action. Management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles and buses or the number of people recreating within the river corridor. These more restrictive measures could result in fewer people in the Valley and could indirectly result in fewer vehicle trips (and vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. Management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region relative to Alternative 1.

Conversely, implementation of management actions that result in site hardening, construction of new facilities (e.g., observation platforms, boardwalks, or new trails), or removal of existing facilities (e.g., parking spaces, picnic tables) could result in the generation of substantial amounts of dust (including PM-10 and PM-2.5) primarily from "fugitive" sources (i.e., emissions released through means other than a stack or tailpipe) and lesser amounts of other criteria air pollutants, primarily from operation of heavy equipment. Dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, these construction activities could result in significant quantities of dust, and, as a result, local visibility and PM-10 and PM-2.5 concentrations could be adversely affected. Without mitigation, dust raised by construction from certain management actions could have a moderate but temporary effect in the immediate vicinity of individual sites. Implementation of Best Management Practices listed in Appendix B would reduce these temporary and localized air quality impacts to a minor level. On this basis, these types of management actions could result in localized, short-term, minor, adverse impacts on air quality. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 2 is expected to prevent visitor use from adversely affecting ORVs in the Valley segments. Certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of the VERP program under Alternative 2 would likely have a local, long-term, negligible, beneficial impact on air quality in the Valley compared to Alternative 1 because any increases in user numbers and associated vehicle use would likely be lower.

Impacts in the Gorge. Like Alternative 1, under Alternative 2, areas zoned Untrailed (1A), Open Space and Undeveloped Open Space (2A, 2A+), and Discovery (2B) in the Gorge segment would

continue to not be affected by local emissions sources (with the exception of prescribed fires) but would be subject to regionwide emissions trends. Areas zoned Day Use (2C), Attraction (2D), and Park Operations and Administration (3C) would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular emissions in those areas.

In the short term, visitor levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, user numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to VERP monitoring.

Implementation of the VERP program could have an indirect, beneficial impact on air quality in the Gorge. VERP indicators do not directly address conditions specific to air quality; however, monitoring of congestion on major park roads indirectly addresses localized air quality in congested areas. If the standards set for congestion levels on major park roads or other standards and indicators were not met, management actions would be required to remedy the situation.

Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions to reduce visitor activities or access in certain areas, as discussed in previous sections. Management actions would likely differ depending on which zone(s) were affected. Since most of the Gorge segment is zoned for less intensive uses, management actions in these areas would more likely be restrictive regarding levels of use and activities

The effects of management actions would vary by the action. Management actions such as visitor education would likely have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses or the number of people recreating within the river corridor. These more restrictive measures could result in fewer people in the Gorge segment and could indirectly result in fewer vehicle trips and associated vehicle-miles traveled and a corresponding reduction in ozone precursor and particulate matter emissions. On this basis, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor (with implementation of Best Management Practices), adverse impacts on air quality during construction as discussed under the Yosemite Valley segment above. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 2 is expected to prevent visitor use from adversely affecting ORVs in the Gorge segment. Certain management actions in response to monitoring could result in localized short-term, minor (with implementation of Best Management Practices), adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, the Alternative 2 VERP program would likely have a local, long-term, negligible, beneficial impact on air quality in the Gorge segment compared to Alternative 1 because any increases in user numbers and associated vehicle use would likely be lower.

Impacts in El Portal. Under Alternative 2, the boundary for the El Portal segment of the river would be based on a quarter-mile boundary on either side of the river. The management zoning in El

Portal under Alternative 2 would primarily be zoned Park Operations and Administration (3C) north of the river and in existing developed areas south of the river, and be zoned Day Use (2C) and Open Space (2A) in undeveloped areas south of the river. On the north side of the river, some known ORVs would also be protected through Day Use (2C) zoning. Development in the El Portal area would be more restrictive under Alternative 2 than under Alternative 1, where the boundary would be limited to the 100-year floodplain or River Protection Overlay, whichever is greater. The total acreage within the El Portal segment of the river corridor under Alternative 2 would be 853 acres, which is substantially greater than the boundary presented under Alternative 1.

The proposed boundary and zoning designations for the El Portal segment would likely result in some additional development or redevelopment within the 3C zones, and to a much lesser extent in 2C zones. Construction or redevelopment could result in quantities of dust being generated, which could adversely affect local visibility due to increased PM-10 and PM-2.5 concentrations. Without mitigation, dust raised by construction in the El Portal segment under Alternative 2 could have a moderate to major but temporary effect in the immediate vicinity of individual sites. Implementation of Best Management Practices would reduce the temporary and localized air quality impacts from construction activities to a minor level. On this basis, the construction associated with the management zoning under Alternative 2 could result in localized, short-term, minor, adverse impacts on air quality. However, overall, development in El Portal under Alternative 2 could be less intensive than under Alternative 1.

In the short term, visitor levels in El Portal would remain approximately the same as existing levels, similar to Alternative 1. With the exception of housing, interim facility limits would be capped at existing levels. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to VERP monitoring and management.

Implementation of the VERP program could have an indirect, beneficial impact on air quality in El Portal. VERP indicators do not directly address conditions specific to air quality; however, monitoring congestion on major park roads indirectly addresses localized air quality in congested areas. If the standards set for congestion levels on major park roads or other standards and indicators were not met, management actions would be required to remedy the situation.

Management actions could range from less restrictive measures to more restrictive actions described in previous sections. Management actions to address standards in the 2A, 2C and 3C zones could continue to allow for visitor use because these zones are identified as being appropriate for higher use levels.

The effects of management actions would vary by the action taken. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses or the number of people recreating within the river corridor. These more restrictive measures could result in fewer vehicle trips and associated vehicle-miles traveled and a corresponding reduction in ozone precursor and particulate matter emissions. However, since Highway 140 runs through the El Portal segment, reductions in vehicle trips through the segment would be nominal. Management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor (with implementation of Best Management Practices), adverse impacts on air quality. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 2 is expected to prevent visitor use from adversely affecting ORVs in the El Portal segment. Development associated with the El Portal boundary under Alternative 2 could result in localized short-term, minor, adverse impacts on air quality during construction or redevelopment activities. However, development in El Portal under Alternative 2 could be less intensive than under Alternative 1 because of the increased corridor boundary. Overall, with respect to ozone and particulate matter, implementation of the VERP program would be expected to have a local, long-term, negligible, beneficial impact on air quality in the El Portal area relative to Alternative 1.

Impacts in Wawona. Like Alternative 1, under Alternative 2 air quality in Wawona would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in Wawona. Emissions from local stationary sources, area sources, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1.

In the short term, visitor levels in Wawona would remain approximately the same as existing levels like Alternative 1. Interim facility limits would be capped at existing facility levels. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to VERP monitoring and management.

The VERP program could have an indirect, beneficial impact on air quality in Wawona. Although VERP indicators do not directly address conditions specific to air quality, monitoring of congestion on major park roads indirectly addresses localized air quality in congested areas. If the standards set for level of congestion on major park roads or other standards and indicators were not met, management actions would be required to remedy the situation.

Management actions could range from less restrictive measures (such as education) to more restrictive actions to reduce visitor access in certain areas, as described in previous sections.

The effects of management actions would vary by the action. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses or reducing the number of people recreating within the river corridor. These more restrictive measures could result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. Therefore, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, implementation of the management actions such as site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor (with implementation of Best Management Practices), adverse impacts on air quality during construction. Some of the site-hardening activities (e.g., boardwalks and observation platforms)

could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 2 is expected to prevent visitor use from adversely affecting ORVs in Wawona. Certain management actions in response to VERP monitoring could result in localized, short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, VERP program would likely have a local, long-term, negligible, beneficial impact on air quality in Wawona compared to Alternative 1 because any increases in visitor numbers and associated vehicle use would likely be lower.

Summary of Alternative 2 Impacts. Overall, Alternative 2 would likely prevent visitor use from adversely affecting ORVs. Interim limits on the number of commercial tour buses allowed into Yosemite Valley (implemented to address traffic congestion) would also reduce criteria air pollutant emission levels in the Valley compared to Alternative 1. Certain VERP management actions and potential development allowable under the revised river corridor boundary in El Portal could result in localized, short-term, minor, adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 2 would be less intensive than under Alternative 1. Overall, Alternative 2 would be expected to have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1 because any increases in visitor numbers and associated vehicle use would likely be lower due to VERP monitoring and management.

Cumulative Impacts

The effects of past, present and reasonably foreseeable projects would be the same as those identified and described under Alternative 1.

Based on the revised river corridor boundary in El Portal and implementation of certain management actions in response to VERP monitoring, Alternative 2 could contribute to the cumulative number of construction sites in and near the river corridor. In most instances, construction projects undertaken as part of Alternative 2 would not overlap in time and space with cumulative construction projects; therefore, the local, short-term, major, adverse effects on air quality due to construction activities could be reduced to a minor intensity with implementation of Best Management Practices.

Over the long term, with respect to ozone, conditions in the river corridor would be determined almost entirely by regional emissions trends. The local, long-term, negligible, beneficial impact on air quality in wilderness and non-wilderness areas within the Merced River corridor associated with Alternative 2 (compared to Alternative 1) would have little effect on overall ozone levels in Yosemite National Park. As discussed under Alternative 1, the long-term, regional effect would be moderate and beneficial, primarily due to the emissions reductions expected to occur with implementation of ongoing state and federal mobile-source control programs. With respect to particulate matter, conditions in the corridor would be determined by both regional sources and local sources, and the relative influence of these two types of sources would vary on a daily and seasonal basis. Given the opposing emissions trends between primary and secondary sources of particulate matter and the varying relative contributions of regional and local emissions sources, it would be speculative to conclude that the combined effect of cumulative actions and the benefits of Alternative 2 (relative to Alternative 1) would be beneficial or adverse with respect to

particulate matter; however, the opposing emissions trends would tend to diminish the magnitude of the effect, regardless of whether the effect would be beneficial or adverse.

Impairment

Management actions in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 2 would be less intensive than under Alternative 1. Overall, implementation of Alternative 2 would be expected to have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1 because any increases in visitor numbers and associated vehicle use would likely be lower due to VERP monitoring and management. Therefore, Alternative 2 would not impair air quality in the park.

Noise

Analysis

The following discussion provides an overview of the types of impacts to the ambient noise environment associated with Alternative 2 that could occur within each segment of the Merced River corridor.

Under Alternative 2, the acoustical environment in wilderness areas would generally continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in Yosemite National Park would follow trends similar to those described under Alternative 1.

The main differences between noise conditions under Alternative 2 and those under Alternative 1 would relate to the following issues: implementation of the VERP program; interim limits on the number of commercial tour buses allowed into Yosemite Valley; and the construction or demolition activities and long-term impacts on the noise environment that could occur as a result of the change in management zoning resulting from adoption of a quarter-mile river corridor boundary in the El Portal segment of the river.

Impacts in Wilderness. The enjoyment of natural river sounds is integrated into the recreation ORVs in designated wilderness areas (the wilderness areas of the main stem and the South Fork of the Merced River). That aspect would continue to be considered for protection and enhancement in wilderness areas.

User capacity within wilderness areas of Yosemite National Park is currently addressed through trailhead quotas and monitoring of wilderness resource conditions. Under Alternative 2, use of trails in wilderness areas would continue, consistent with existing conditions and conditions under Alternative 1.

Implementation of the VERP program would provide information on the numbers of people recreating within the river corridor and the number of people at one time at selected sites. This could provide indirect information on the potential for impacts to enjoyment of natural river sounds in wilderness areas. If the recreation standards, which are also designed to protect the

enjoyment of natural river sounds, were not met, management actions would be required to improve the recreational parameters to a level that meets the established standards and protects and enhances the recreation ORV in wilderness areas.

Management actions taken in response to VERP monitoring data could range from softer measures (visitor education efforts) to more restrictive measures (increased enforcement of existing regulations, restrictions on certain activities [such as stock use], and restrictions on level of use [closure of certain areas]). Educational efforts could include printed or video information that visitors are required to view and acknowledge prior to receiving a wilderness permit. The most restrictive measures could include reducing use through reduced wilderness trailhead quotas and closure of some areas. Additional management actions that could be taken in the heavily used 1C zone would include restrictions on day use, such as requiring permits for day hikers, limiting day-use access to guided groups, or reducing infrastructure (such as the cables at Half Dome).

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken. Management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the enjoyment of natural river sounds and the broader ambient noise environment. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects by reducing the number of people recreating within the river corridor, and the River Protection Overlay in particular, and the number of encounters with other parties and the number of people at one time at selected sites in wilderness areas. These more restrictive measures would result in local, short- and long-term, negligible to minor, beneficial impacts on the enjoyment of natural river sounds and the broader ambient noise environment.

Overall, the acoustical environment in wilderness areas would, however, continue to experience intrusive noise generated by high-altitude aircraft overflights. In some wilderness areas, such overflights would continue to be the principal source of adverse noise impacts. Noise from high-altitude aircraft overflights may worsen over the long term, if the upward national trend in the number of aircraft flights continues. The VERP program would not address conditions related to aircraft overflights.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in wilderness areas as a result of the park's existing trailhead quota system, implementation of the VERP program would be expected to have a local, long-term, negligible to minor, beneficial impact on the natural enjoyment of river sounds portion of the recreation ORV and the broader ambient noise environment in wilderness areas relative to Alternative 1.

Impacts in Yosemite Valley. As under Alternative 1, under Alternative 2 the acoustical environment in the Valley would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in wilderness and nonwilderness areas of the Valley would follow trends similar to those described under Alternative 1.

In the short term, visitor levels and associated traffic in the Valley would remain approximately the same as existing levels, similar to Alternative 1. With the exception of housing, buses, and campground sites, interim facility limits would be capped at existing levels. An increase in tour buses over current levels would incrementally contribute to noise levels in those areas of

Yosemite Valley frequented by buses. This increase would result in a local, short-term, minor adverse effect on noise. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 as a result of the VERP program.

Implementation of the VERP program could have an indirect, beneficial impact on the ambient noise environment in the Valley. For example, the interim limits on the number of commercial tour buses allowed into the Valley could reduce roadside noise levels in the Valley relative to Alternative 1 in the short term.

VERP indicators do not directly address conditions specific to the ambient noise environment; however, monitoring of level of congestion on major park roads and the actual number of people recreating within the River Protection Overlay could have indirect, beneficial noise impacts. If these recreational standards or other standards and indicators were not met, management actions would be required to be implemented to remedy the situation.

Management actions could range from increased visitor education, to reducing infrastructure (parking, picnic areas, etc.), to further limiting the number of day use commercial bus permits (including YARTS) or the number of cars allowed in the Valley, to construction of facilities (boardwalks, platforms, trails) to allow access to sensitive areas while protecting the natural resources, to restrictions on level of use (closure of certain areas). Management actions would likely differ depending upon which zone(s) would be affected. Management actions would be more likely to be restrictive of levels and types of visitor use in zones 2A and 2B, as these areas typically are more sensitive to visitor impacts and would be managed for lower visitor concentrations. Management actions taken to address standards in zones 2C and 2D, and in Developed Zones would likely focus more on education, site hardening and other management actions that would continue to allow for visitor use, as these areas have been identified as being appropriate for higher levels of visitor use.

Management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles, buses, or the number of people recreating within the river corridor. These more restrictive measures would result in fewer people in the Valley and could indirectly result in fewer vehicle trips on park roads, associated vehicle-miles traveled and correspondingly lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley relative to Alternative 1.

Conversely, implementation of the management actions that result in site hardening, construction of new facilities (e.g., observation platforms, boardwalks, or new trails) or removal of existing facilities (e.g., parking spaces, picnic tables) could result in construction or demolition activities that could generate substantial amounts of noise during the temporary construction period. The noise levels generated by typical pieces of construction equipment are shown in table V-2.

Table V-2
Typical Noise Levels from Construction Equipment

Equipment	Typical Noise Level (dBA) 50 feet from the Source
Air Compressor	81
Backhoe	80
Bulldozer	85
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Rock Drill	98
Roller	74
Saw	76
Scraper	89
Truck	88
Rock Blasting	111 to 115 *

dBA = A-weighted decibels

* Adjusted to a distance of 50 feet; original data of 107 to 111 dBA corresponds to a distance of 75 feet. Measurement of rock blasting reflects use of non-glycerin dynamite.

SOURCE: FTA 1995, except for rock blasting; rock blasting data provided by the National Park Service (NPS 2000b).

At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, such as the number and types of equipment in operation on a given day, their usage rates, the level of background noise in the area, and the distance between sensitive uses and the construction site. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short-term, moderate, and adverse. Implementation of mitigation measures as described in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, these types of management actions implemented as a result of VERP monitoring could result in localized, short-term, minor, adverse impacts on the ambient noise environment related to their construction.

Overall, Alternative 2 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley relative to Alternative 1, since any increases in visitor numbers, associated vehicle use, and corresponding noise levels would likely be lower.

Impacts in the Gorge. As under Alternative 1, under Alternative 2, the acoustical environment in areas zoned 1A, 2A, 2A+, and 2B would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights and distant roadway noise. The acoustical environment in areas zoned 2C, 2D and 3C would continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in the Gorge segment of the river corridor would follow trends similar to those described under Alternative 1. Areas zoned 2C, 2D and 3C would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise in those areas.

In the short-term, visitor levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than for Alternative 1 due to VERP monitoring and management.

Implementation of the interim limits with VERP program could have an indirect beneficial impact on the ambient noise environment in the Gorge segment. VERP indicators do not directly address conditions specific to the ambient noise environment; however, monitoring the level of congestion on major park roads and the actual number of people recreating within the River Protection Overlay could result in indirect, beneficial noise impacts. If these recreational standards or other standards and indicators were not met, management actions would be required to remedy the situation.

Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas, as discussed in previous sections. Management actions would likely differ depending upon which zone(s) would be affected. Since most zones in the gorge are zoned for less intensive uses, management actions in these areas would be more likely to be restrictive regarding levels of use and activities, versus site hardening to allow additional use.

The effects of these management actions would vary by the action taken, as described above under the Yosemite Valley segment. More restrictive measures could result in fewer people in the Gorge area and could indirectly result in fewer vehicle trips on park roads, associated vehicle-miles traveled, and correspondingly lower roadside noise levels. On this basis, management actions resulting from VERP monitoring could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Gorge segment.

Conversely, implementation of management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 2 would be expected to prevent visitor use from adversely affecting ORVs. Overall, implementation of the VERP program would be expected to have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Gorge segment relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in El Portal. Under Alternative 2, the boundary for the El Portal segment of the river corridor would be based upon a quarter-mile boundary on either side of the river. The zoning in

El Portal within this alternative would contain primarily Park Operations and Administration (3C) zoning for areas north of the river, as well as for existing developed areas south of the river, and Day Use zoning (2C) and Open Space (2A) for undeveloped areas south of the river. On the north side of the river, some specific known ORVs would also be protected through Day Use (2C) zoning. Development in the El Portal area would be more restrictive under Alternative 2 than under Alternative 1, where the boundary would be limited to the 100-year floodplain or River Protection Overlay, whichever is greater. The total acreage within the El Portal segment of the river corridor under Alternative 2 would be 853 acres, which is substantially greater than the boundary presented under Alternative 1.

The proposed boundary and zoning for the El Portal segment would likely result in some additional development or redevelopment within the 3C areas, and to a much lesser extent in 2C areas. The ambient noise environment in these zones could be influenced by noise from construction, demolition, or redevelopment activities. At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, as discussed under the Yosemite Valley segment above. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short-term, moderate, and adverse. Implementation of the mitigation measures described in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, the construction associated with the management scheme under Alternative 2 could result in localized, short-term, minor, adverse impacts on the ambient noise environment. However, overall, development in El Portal under Alternative 2 could be less intensive than under Alternative 1.

In the short term, visitor levels in El Portal would remain approximately the same as existing levels, similar to Alternative 1. With the exception of housing, interim facility limits would be capped at existing levels. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than for Alternative 1 due to VERP monitoring and management. The 2C and 3C zoning would allow for concentrated day use and development in the El Portal Administrative Site area, respectively. Development and increased day use opportunities could increase the number of vehicle-miles traveled within the El Portal segment of the river corridor. Development in this area could cause a local, long-term, minor, adverse effect on the ambient noise environment due to the concentration of vehicular noise and human activity in these areas.

Implementation of the interim limits with VERP program could have an indirect, beneficial impact on the ambient noise environment in the El Portal area as discussed above under the Yosemite Valley segment. Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas. Management actions taken to address standards in the areas zoned 2A, 2C and 3C could focus more on education, site hardening, and other management actions that continue to allow for visitor use, as these areas have been identified as being appropriate for higher levels of visitor use.

The effects of these management actions within the El Portal area would vary by the action taken. In general, management actions such as visitor educational measures would be expected to result

in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could result in fewer people or vehicles in the El Portal area and could indirectly result in fewer vehicle trips on park roads, associated vehicle-miles traveled and correspondingly lower roadside noise levels. However, since the El Portal segment includes Highway 140, a primary entrance road to the park, reductions in vehicle trips through the segment would be nominal. On this basis, management actions could result in local, short-term and long-term, negligible, beneficial effects on the ambient noise environment in the El Portal area.

Conversely, implementation of the management actions that result in site hardening, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 2 would be expected to prevent visitor use from adversely affecting ORVs. Development associated with implementation of the El Portal boundary as described for Alternative 2 and certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction or redevelopment activities. However, development in El Portal under Alternative 2 would be less intensive than under Alternative 1 as the corridor area for Alternative 2 would be increased. Overall, implementation of the VERP program would be expected to have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the El Portal area relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in Wawona. As under Alternative 1, under Alternative 2 the acoustical environment in Wawona would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in Wawona would follow trends similar to those described under Alternative 1.

In the short term, visitor levels in Wawona would remain approximately the same as existing levels, similar to Alternative 1. Interim facility limits would be capped at existing facility levels. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than for Alternative 1 due to the VERP program.

Implementation of the interim limits with VERP program could have an indirect, beneficial impact on the ambient noise environment in Wawona, as discussed under the Yosemite Valley segment.. Management actions would be required to be implemented to remedy the situation. Again, these management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas.

The effects of these management actions would vary by action taken. In general, management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles, buses, or the number of people recreating within the river corridor. These more restrictive measures would result in fewer people in Wawona and could indirectly result in fewer vehicle trips on park roads, associated vehicle-

miles traveled and correspondingly lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona.

Conversely, implementation of the management actions that result in site hardening, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 2 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of the VERP program overall would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona relative to Alternative 1, since any increases in visitor numbers, associated vehicle use, and corresponding noise levels would likely be lower.

Summary of Alternative 2 Impacts. As under Alternative 1, the acoustical environment in wilderness areas would not be affected by Alternative 2, but would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would continue to be shaped by human-caused sources of noise and by natural sources of sound.

Overall, Alternative 2 would be expected to prevent visitor use from adversely affecting ORVs. Interim limits on the number of commercial tour buses allowed into Yosemite Valley, which would be intended to address traffic congestion, would also reduce roadside noise levels in the Valley relative to Alternative 1. Certain management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized, short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, development in El Portal under Alternative 2 would be less intensive than under Alternative 1 as the corridor area would be increased. Less intensive development could have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the El Portal area.

Overall, implementation of Alternative 2 would be expected to have a local, long-term, negligible, beneficial impact on ambient noise levels in nonwilderness areas within the Merced River corridor relative to Alternative 1, since any increases in visitor numbers, associated vehicle use, and corresponding noise levels would likely be lower due to the VERP program.

Cumulative Impacts

Cumulative effects to the ambient noise environment are described under Alternative 1.

Based on the revised river corridor in El Portal and implementation of certain management actions that could be implemented in response to VERP monitoring, Alternative 2 could contribute to the cumulative number of construction sites in and near the corridor; in most instances, construction projects undertaken as part of Alternative 2 would not overlap in time and space with cumulative construction projects, and thus, the local, short-term, adverse effects on

noise due to construction activities could be reduced to a moderate intensity with implementation of best management practices. Over the long term, in wilderness areas, noise impacts in the corridor would be determined almost entirely by cumulative trends in air travel rather than by in-park noise sources under Alternative 2; as discussed under Alternative 1, if the national trend in air travel continues to increase, it could result in a local, long-term, minor, adverse effect on the ambient noise environment. In nonwilderness areas, the cumulative actions that would tend to reduce motor vehicle trips would result in a local, long-term, moderate, adverse effect on noise levels in the immediate vicinities of such facilities due to the concentration of vehicular activity, but could result in a local, long-term, moderate, beneficial effect in the eastern portion of the Valley due to reduced vehicle trips and related noise and related to the type of bus technology used for transit purposes.

Taken as a whole, Alternative 2, with implementation of the VERP program and its more restrictive development scheme in the El Portal area, would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1.

Impairment

Management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor (with implementation of best management practices), adverse impacts to the noise environment and the soundscapes in the vicinities of construction or demolition projects. However, development in El Portal under Alternative 2 would be less intensive than under Alternative 1. Overall, Alternative 2 with implementation of the VERP program and its more restrictive development scheme in the El Portal area would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower due to VERP monitoring and management. Therefore, implementation of Alternative 2 would not impair park soundscapes.

Cultural Resources

Archeological Resources

Analysis

The following discussion provides an overview of the types of impacts to archeological resources that could occur within each segment of the Merced River corridor under Alternative 2.

Management actions associated with the redirection of visitors from areas with known archaeological resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Archeological resources within Yosemite's wilderness include historic and prehistoric resources related to occupation and homesteading, hunting, travel and trade, the U.S. Cavalry, and wilderness tourism.

User capacity within wilderness areas of Yosemite National Park is addressed through wilderness trailhead quotas and monitoring of wilderness resource conditions. Implementation of the interim limits with VERP program for the wilderness areas would result in additional monitoring of indicators within wilderness areas. VERP indicators to be monitored in wilderness zones are listed in table II-5.

The interim limits within the wilderness call for no new campgrounds or trails, therefore there are no anticipated new effects to archeological resources due to interim limits.

In the event that VERP monitoring indicates that resource and ORV conditions are not meeting established standards, management would implement measures to bring conditions back within standards. These management actions would range from efforts to educate visitors about less-used areas, to more restrictive measures, such as additional reductions in trailhead quotas, reductions in accommodations at High Sierra Camps, restrictions on certain activities, enforcement of specific wilderness itineraries, or temporary to permanent closure of certain areas. Additional management actions that could be taken in the Heavy Use Trail (1C) zone would include restrictions on day use, such as requiring permits for day hikers, limiting day-use access to guided groups, or reducing infrastructure (such as the cables at Half Dome).

The impacts of the management actions implemented as a result of VERP would vary depending on the action taken. Management actions related to visitor education are likely to reduce impacts to archeological sites by encouraging more dispersion of visitors within wilderness areas and changing visitor behaviors by providing information on activities that cause adverse impacts. Education efforts are expected to result in local, short- and long-term, minor, beneficial impacts on archeological resources. More restrictive measures, such as reducing trailhead quotas, restricting stock use, and limiting day-use access in heavily used areas to users with permits or guided groups, would likely have local, long-term, moderate, beneficial effects on the archeological resources due a potential decrease in degradation of archeological deposits.

Impacts in Yosemite Valley. The archeological resources within Yosemite Valley include several historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

The VERP indicators to be monitored in the various zones in the Valley are listed in table II-5. Indicators that relate to archeological resources include the length of social trails in meadows, actual number of people recreating within the River Protection Overlay, and riverbank erosion that is accelerated or caused by visitor use. Management actions would be implemented if monitoring of the VERP indicators shows that standards for these indicators are not being met. Management actions could include increased visitor education, restricting access to sensitive areas, restricting or limiting activities (swimming, picnicking, etc.) in specific areas, improving roads to accommodate higher volumes, or constructing boardwalks to allow access to sensitive areas while protecting the natural resources. Management actions could also include closure and restoration of areas adversely affected by visitor use.

The effects of these additional management actions within the Valley would vary by the action taken. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and water pollution would likely improve the natural and cultural setting, and result in local, short- and long-term, negligible to minor, beneficial effects on

archeological resources. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on car and/or bus access to Yosemite Valley, would benefit the archeological resources by reducing opportunities for site degradation. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on archeological resources if proposed facilities would damage deposits or increase the likelihood of visitor-related damage. These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and other Merced River Plan elements. The effects would likely be local, long term, negligible to minor, and adverse.

Interim limits in Yosemite Valley allow for an increase in camping in the Camping (3A) zones. No new parking or overnight accommodations would be added. The potential for new or redeveloped campgrounds in the Valley could adversely impact archeological resources. These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and other Merced River Plan elements which require the protection of ORVs on a segment-wide basis. The interim limits would also allow for an increase in tour buses over current levels. Potential tour bus increases would have a negligible to minor impact on archeological resources, as these visitors typically stay on site-hardened areas such as parking and adjacent roadside areas. The effects would likely be local, long term, minor, and adverse. Alternative 2 would have an overall local, long-term, moderate, beneficial impact on archeological resources, except for possible future site-hardening activities, which have the potential to cause a local, long-term, minor, adverse impact on archeological resources.

Impacts in the Gorge. The archeological resources within the Gorge segment include historic and prehistoric sites related to occupation, the Civilian Conservation Corps, early roads and trails, road development, and early tourism.

The VERP indicators to be monitored in the gorge zones are listed in table II-5. The effects of VERP management actions within the Gorge would vary by the action taken. Educational measures would be expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on vehicle access and parking, limits on activities near the river, or overall reduced visitor levels, would likely provide for a less crowded environment. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site-hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in some adverse effects on archeological resources, but would be limited to the small areas designated for higher levels of development and use—Attraction (2D) and Park Operations and Administration (3C) zones. Because the park is mandated to protect the cultural ORV, the effects of new development would likely be local, long term, negligible to minor, and adverse.

Interim limits in the Gorge segment would maintain day-visitor parking at the existing levels; therefore, no new impacts are anticipated. Alternative 2 would have an overall local, long-term, moderate, beneficial impact on archeological resources in the Gorge, except for site-hardening activities, which have the potential to cause a local, long-term, minor, adverse impact on archeological resources.

Impacts in El Portal. Archeological resources for El Portal consist of some of the oldest prehistoric sites within the Merced River corridor. Prehistoric and historic archeological sites and districts in El Portal include examples of villages, homesteads, early tourism, as well as the mining, railroad, and timber industries.

The boundary for the El Portal segment of the river in Alternative 2 is based upon a quarter-mile boundary. The zoning proposed for the El Portal segment under Alternative 2 calls for Park Operations and Administration (3C) and Day Use (2C) north of the river. South of the river, existing developed areas are zoned 3C, undeveloped areas west of the levee are zoned 2C, and undeveloped areas east of the levee are zoned 2A (Undeveloped Open Space). Alternative 2 provides a total of 411 acres of Park Operations and Administration zoning (3C), 192 acres of Day Use zoning (2C), and 250 acres of Open Space zoning (2A).

The area zoned 3C could allow for the development of roads, interpretive facilities, administrative facilities and employee housing. The area zoned 2C could allow construction of new day use facilities such as bicycle trails, restrooms, picnic tables, and paved trails. The area zoned 2A could allow construction of unpaved trails and limited interpretive signs.

Under Alternative 2, interim limits would not allow for any increase in parking, visitor services, or any additional park facilities above current levels. In the long term, the proposed boundary and zoning designations for the El Portal segment are likely to result in additional development or redevelopment within the 3C zones, but the 2C and 2A zoning along much of the corridor would substantially limit new development in El Portal. This increased development north of the river and in the trailer village south of the river, could result in an adverse effect to archeological resources. However, the majority of known, undisturbed archeology sites are not located in 3C zones. The effect of new development on archeological resources within the segment would vary depending on the nature of the development and its proximity to archeological sites. All development would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement.

New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan, as well as current park management policies. These management policies guide how actions could be implemented in order to minimize adverse effects to cultural resources. All ORVs must be protected on a segment-wide basis regardless of the zoning designation or whether the resources are in or outside of the river corridor boundary. Therefore, the adverse effect of new development on archeological resources within the segment would likely be local, long-term, and negligible to minor.

The application of the revised El Portal river corridor boundary under this alternative is expected to have a local, long-term, moderate, beneficial effect on archeological resources in the El Portal segment compared to Alternative 1, because of the more stringent zoning restrictions.

Implementation of a VERP program in El Portal would include monitoring of the indicators identified for areas zoned 2A, 2C, and 3C. The indicators that relate to archeological resources for these management zones include actual number of people recreating within the River Protection Overlay, number of social trails, number of social trails, and riverbank erosion that is accelerated or caused by visitor use. The effects of management actions would vary by the action taken. Educational measures would likely result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures, such as limits on vehicle access and parking, limits

on activities near the river, or overall reduced visitor levels, are expected to provide for a less crowded environment. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on archeological resources. These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and other Merced River Plan elements. The effects would likely be local, long term, negligible to minor, and adverse.

Impacts in Wawona. The archeological resources in Wawona include historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Implementation of the VERP program with interim limits throughout the Wawona segments would include monitoring of indicators described in table II-5. Indicators that relate to archeological resources include (1) length of social trails in meadows, (2) actual number of people recreating within the River Protection Overlay, and (3) riverbank erosion that is accelerated or caused by visitor use. The VERP process would result in management actions being taken to address conditions that do not meet the standards set for each zone. The intensity of the measures taken would depend on the condition of the resources and the zoning of the area.

The Wawona segment is primarily zoned for low-intensity visitor use, with very limited areas for higher intensity uses (e.g., the golf course, Pioneer Yosemite History Center). Therefore, management actions taken to address VERP monitoring are likely to focus on more restrictive measures as opposed to measures such as site hardening. Educational efforts are expected to result in local, long-term, negligible to minor, benefits to archeological resources, as discussed above. More restrictive measures, such as restrictions on activities or use levels in various areas, would likely result in short-term or long-term, moderate, beneficial impacts to archeological resources. However, the effect of new development on archeological resources within the segment would vary depending on the nature of the development and its proximity to archeological sites. All development would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and the elements of the Merced River Plan.

In the area below Wawona, which is zoned for Undeveloped Open Space (2A+), VERP management actions taken to address the number of visitors and social trails are likely to be focused on education and more restrictive measures to reduce visitor levels and restore the natural resources. Site hardening would not be appropriate in this area. Education efforts to limit the number of visitors and reduce impacts to natural resources would likely have long-term, negligible to minor, beneficial effects on archeological resources. More restrictive measures, such as enforced limits on the number of visitors accessing the area, would benefit archeological resources by decreasing the likelihood for visitor-related damage such as surface collection, erosion, and trampling.

Interim limits in Wawona allow for an increase in employee housing in the limited 3C zones that exist in Wawona. No new parking, overnight visitor accommodations, or camping will be added. New employee housing could adversely impact archeological resources; some of these archeological resources have been previously disturbed and lack integrity, but many remain relatively intact. These actions would be subject to site-specific planning and compliance and

would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the elements of the Merced River Plan. The effects would likely be local, long-term, minor to major, and adverse.

Summary of Alternative 2 Impacts. Compliance with existing park policies and federal regulations such as the National Historic Preservation Act and implementation of a VERP program with interim limits would help ensure that the archeological component of the cultural ORVs in each river segment are protected and enhanced.

Implementation of management actions to address information from VERP monitoring is expected to improve natural and cultural conditions within the corridor. The improvements to the natural setting and reduced crowding and congestion would likely provide benefits to archeological resources within the corridor due to fewer visitor-related impacts such as trampling, erosion, surface collection, and vandalism. If restrictive management actions are required to achieve these conditions, there would be local, long-term, minor benefits to archeological resources. Management zones in El Portal that allow for increased levels of development could have a local, long-term, negligible, adverse effect on archeological resources.

Overall, the implementation of the VERP program with interim limits, based on the management zoning and other elements in the Merced River Plan, would result in long-term, minor to moderate, beneficial impacts on archeological resources compared to Alternative 1.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1. The cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, moderate, adverse impact on archeological resources. Overall, these cumulative actions in combination with Alternative 2 could have a net long-term, moderate, adverse impact on archeological resources within the Merced River corridor.

Impairment

Alternative 2 would have local, long-term, minor to moderate, beneficial impacts as well as local, long-term, minor, adverse impacts on archeological resources. Since adverse impacts are expected to be minor, this alternative would not impair the park's archeological resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in "no effect" to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Any future actions allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Traditional Cultural Resources

Analysis

The following discussion provides an overview of the types of impacts to traditional cultural resources that could occur within each segment of the Merced River corridor from implementation of the park's user capacity management program with a VERP program. Effects on traditional cultural resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas with known traditional cultural resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Traditional cultural resources in the wilderness include continuing uses such as the travel/trade routes connecting the east and west slopes of the Sierra Nevada range.

The impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken. Management actions related to visitor education are likely to reduce impacts to traditional cultural resources by encouraging more dispersion of visitors within wilderness areas and changing visitor behaviors by providing information on activities that result in adverse impacts. Education efforts are expected to result in local, short- and long-term, negligible, beneficial impacts on traditional cultural resources. More restrictive measures, such as reducing trailhead quotas, restricting stock use, and limiting day-use access in heavily used areas to users with permits or guided groups, would likely have local, long-term, negligible, beneficial effects on traditional cultural resources.

Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quotas in response to VERP monitoring would likely have a local, long-term, negligible, beneficial impact on traditional cultural resources due to potentially reduced crowding. American Indian access to these resources in the wilderness will continue to be guided by the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). As per this agreement, restrictive measures on wilderness use would not apply to American Indians conducting traditional activities.

The interim limits within the wilderness call for no new campgrounds or trails; therefore, there are no anticipated new effects to traditional cultural resources due to interim limits.

Impacts in Yosemite Valley. Traditional cultural resources within Yosemite Valley encompass many natural and cultural features throughout the Valley that maintain their traditional importance used by local American Indian groups. These resources include gathering areas, religious sites, village sites, and cemeteries.

VERP indicators to be monitored in the various zones in the Valley are listed in table II-5. The indicator most directly related to traditional cultural resources is the extent/magnitude of three traditionally used plant species. Management actions would be implemented if monitoring of the

VERP indicators shows that standards for these indicators are declining or not being met. Management actions could include increased visitor education, restricting access to sensitive areas, restricting or limiting activities (swimming, picnicking, etc.) in specific areas, or constructing boardwalks to allow access to sensitive areas while protecting the traditional cultural resources. Management actions could also include closure and restoration of areas adversely affected by visitor use.

The effects of these management actions within the Valley would vary by the action taken. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and water pollution are expected to improve the natural and cultural setting, and result in local, short- and long-term, negligible to minor, beneficial effects on traditional cultural resources. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on car and/or bus access to Yosemite Valley, would benefit the traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Interim limits in Yosemite Valley allow for an increase in camping in the Camping (3A) zones. No new parking or overnight accommodations would be added. The potential for new or redeveloped campgrounds in the Valley could result in local, minor, adverse impacts on traditional cultural resources, depending on location or campsite design. These actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and would be guided by the park's agreements with local American Indian groups. The interim limits would also allow for an increase in tour buses over current levels. Potential tour bus increases would have a negligible to minor adverse impact on traditional cultural resources, as these visitors typically stay on site-hardened areas, such as parking and adjacent roadside areas. The effects would likely be local, long term, negligible, and adverse. Alternative 2 would have an overall local, long-term, moderate to major, beneficial impact on traditional cultural resources in the Yosemite Valley segment.

Impacts in the Gorge. The traditional cultural resources for the Gorge segment include gathering areas and villages. The effects of VERP management actions within the Gorge would vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes, such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in local, short-term or long-term, moderate, beneficial impacts to traditional cultural resources through resource protection.

Interim limits in the Gorge segment would maintain day-visitor parking at the existing levels; therefore, no new impacts are anticipated in the short term. Alternative 2 would have an overall local, long-term, moderate, beneficial impact on traditional cultural resources in the Gorge through VERP monitoring.

Impacts in El Portal. Traditional cultural resources in El Portal consist of, but are not limited to, gathering areas, cemeteries, geological features of traditional spiritual importance, and prehistoric and historic village sites. Like Yosemite Valley, contemporary associated tribes consider all of El Portal to be a traditional use area.

The boundary for the El Portal segment of the river in Alternative 2 was based upon a quarter-mile boundary. The zoning proposed for the El Portal segment under Alternative 2 calls for Park Operations and Administration (3C) and Day Use (2C) north of the river. South of the river, existing developed areas are zoned 3C, undeveloped areas west of the levee are zoned 2C, and undeveloped areas east of the levee are zoned 2A (Undeveloped Open Space). Alternative 2 provides a total of 411 acres of Park Operations and Administration zoning (3C), 192 acres of Day Use zoning (2C), and 250 acres of Open Space zoning (2A).

The area zoned 3C could allow for the development of roads, interpretive facilities, administrative facilities and employee housing. The area zoned 2C could allow construction of new day use facilities such as bicycle trails, restrooms, picnic tables, and paved trails. The area zoned 2A could allow construction of unpaved trails and limited interpretive signs.

Under Alternative 2, interim limits would not allow for any increase in parking, visitor services, or any additional park facilities above current levels. In the long term, the proposed boundary and zoning designations for the El Portal segment are likely to result in additional development or redevelopment within the 3C zones, but the 2C and 2A zoning along much of the corridor would substantially limit new development in El Portal. Increased development north of the river and in the trailer village south of the river could result in adverse impacts. However, the effect of new development on traditional cultural resources would vary depending on the nature of the development and its proximity to traditional cultural resources. If the construction of proposed new facilities temporarily leads employees or visitors closer to a traditional cultural resource, the effect could be local, short term, minor, and adverse. If the facilities increase visitor or employee exposure to traditional cultural resources, the effect could be local, long term, minor, and adverse. Conversely, if the proposed new facilities avoid traditional cultural resources and reduce visitor/employee-related damage to these resources, the 3C management zoning could have a local, long-term, negligible to minor, beneficial impact.

The areas zoned Day Use (2C) south and north of the river allows for development of trails, restrooms, and picnic areas. The areas zoned Open Space (2A) south of the river allows minimal development. Increased development south of the river in the small 2C areas could result in a short-term or long-term, minor, adverse impact on traditional cultural resources. If the construction of new development temporarily leads visitors closer to traditional cultural resources, the effect could be local, short term, minor, and adverse. If the development increases visitor exposure to traditional cultural resources, the effect could be local, long term, minor, and adverse.

None of the development described above would occur unless the following elements were satisfied. All development would be subject to site-specific planning and compliance and would

be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan (which requires the protection of ORVs), as well as the implementation of current park management policies. These management policies guide how actions could be implemented to minimize adverse effects to cultural resources.

Moreover, this alternative includes implementation of a VERP program within the El Portal segment which would include monitoring of the indicators identified for areas zoned 2A, 2C, and 3C. The indicator most directly related to traditional cultural resources is the extent/magnitude of three traditionally used plants. The effects of management actions would again vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit traditional cultural resources by reducing opportunities for resource degradation such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in local, short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Overall, local, short- and long-term, negligible to minor, adverse impacts and local, short- and long-term, minor to moderate, beneficial impacts on traditional cultural resources could occur as a result of future actions that could be implemented within the revised river corridor. However, adverse effects would be reduced in intensity under Alternative 2 by the application of more stringent zoning and other Merced River Plan elements within the larger, revised river corridor boundary (as compared to Alternative 1), which would require the application of a consistent set of criteria and considerations to a larger area. The implementation of a VERP program would further protect traditional cultural resources, resulting in long-term, moderate, beneficial impacts in El Portal.

Impacts in Wawona. Traditional cultural resources in Wawona include gathering areas, cemeteries, and village sites.

Implementation of the VERP program throughout the Wawona segments would include monitoring of indicators described in table II-5. The indicator most directly related to traditional cultural resources is the extent/magnitude of three traditionally used plants. The VERP process would result in management actions being taken to address conditions that are declining or do not meet the standards set for each zone. These management actions could range from less restrictive measures, such as education, to more restrictive actions related to reducing visitor activities or access in certain areas. The intensity of the measures taken would depend upon the condition of the resources and the zoning of the area.

The Wawona segment is primarily zoned for low-intensity visitor use, with very limited areas for higher intensity uses (e.g., the golf course, Pioneer Yosemite History Center). Therefore, management actions taken to address VERP monitoring are likely to focus on more restrictive measures as opposed to measures such as site hardening. Educational efforts taken in response to monitoring of natural resource and social conditions are expected to result in local, long-term, negligible to minor benefits to traditional cultural resources, as discussed above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit

traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes, such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in local, short-term or long-term, moderate, beneficial impacts to traditional cultural resources through resource protection.

In the Below Wawona segment, which is zoned for Undeveloped Open Space (2A+), VERP management actions to address the number of people and social trails would likely be focused on education and more restrictive measures to reduce visitor levels and restore natural resources. Site hardening would not be appropriate in this area. Educational efforts in response to VERP monitoring of natural resource and social conditions are expected to result in local, long-term, negligible to minor, benefits to traditional cultural resources, as discussed above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes, such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in local, short-term or long-term, moderate, beneficial impacts to traditional cultural resources through resource protection.

Interim limits in the Wawona segment would allow for an increase in employee housing in the small areas zoned Park Operations and Administration (3C). No new parking, overnight visitor accommodations, or camping would be added. New employee housing could result in local impacts on traditional cultural resources. Any potential adverse effects would be mitigated because these actions would be subject to site-specific planning and compliance, guided by the park's agreements with the tribes, and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement. The Merced River Plan's criteria and considerations would also apply to any new development. The effects on traditional cultural resources under Alternative 2 would likely be local, long term, minor, and adverse.

Summary of Alternative 2 Impacts. Compliance with existing park policies, including the 1999 Programmatic Agreement; the 1997 Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities; and federal laws such as the National Historic Preservation Act, American Indian Religious Freedom Act, and Native American Graves Protection and Repatriation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Implementation of management actions to address information from VERP monitoring is expected to improve natural and cultural conditions within the corridor. The improvements to the natural setting and reduced crowding and congestion would likely provide benefits to traditional cultural resources within the corridor. If restrictive management actions are required to achieve these natural and social conditions, there would be moderate benefits to traditional cultural resources related to an improved natural environment. Implementation of the larger corridor boundary and management zones in El Portal under Alternative 2 would allow for less

development than under Alternative 1 and would likely result in a negligible, beneficial effect on traditional cultural resources because new facilities would be designed to avoid traditional cultural resources.

Overall, the implementation of the VERP program with interim limits, based on the management zoning and other elements in the Merced River Plan, would result in long-term, minor to moderate, beneficial impacts on traditional cultural resources and potentially long-term, minor, adverse effects on some traditional cultural resources due to increased development near the resources.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1. Overall, these cumulative actions in combination with Alternative 2 could have a net long-term, minor, beneficial impact on traditional cultural resources within the Merced River corridor due to increased efforts in natural resource restoration. It could also result in a long-term, minor, adverse impact due to increased development, and visitor-related damage.

Impairment

Because impacts to traditional cultural resources are primarily beneficial, Alternative 2 is not expected to impair the park's traditional cultural resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in "no effect" to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Any future actions allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Historic Sites, Structures, and Landscapes

Analysis

The following discussion provides an overview of the types of impacts to historical sites, structures, and landscapes that could occur within each segment of the Merced River corridor from implementation of the park's user capacity management program with a VERP program. Effects on these resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Historic sites, structures, and landscapes in the wilderness include the Merced Lake High Sierra Camp, John Muir Trail, remains of the original Yosemite Grant boundary fence, U.S. Cavalry trails, and sites associated with early stock grazing.

The impacts of the management actions implemented as a result of VERP would vary depending on the action taken. The indicator most closely related to historic sites, structures, and landscapes is people at one time at selected sites. Management actions related to visitor education are expected to reduce impacts to historic sites, structures, and landscapes by encouraging more dispersion of visitors within wilderness areas and changing visitor behaviors by providing

information on activities that cause adverse impacts. Education efforts would be likely result in local, short and long-term, minor, beneficial impacts to historic resources. If VERP indicates that more restrictive measures are needed that reduce wilderness use, there would be a local, long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes due to a potential decrease in visitor-related damage, such as trampling, vandalism, and wear and tear.

The interim limits within the Wilderness segments calls for no new campgrounds or trails; therefore, there are no anticipated new effects to historic sites, structures, and landscapes due to interim limits.

Impacts in Yosemite Valley. Historic sites, structures, and landscapes in Yosemite Valley include the Yosemite Valley Historic District, which consists of historic bridges, a campground, orchards, trails, roads, residences, administrative facilities, and visitor accommodations. The Valley also contains several National Register-eligible or -nominated historic buildings and three National Historic Landmarks: the LeConte Memorial Lodge, the Ranger's Club, and The Ahwahnee.

The indicators to be monitored in the various zones in the Valley are listed in table II-5. Indicators that are most relevant to historic sites, structures, and landscapes include (1) length of social trails in meadows and (2) extent of and diversity of cover of riparian vegetation within the river corridor. The effects of VERP management actions within the Valley in response to VERP monitoring would vary by the action taken. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and social trails, are expected to improve the natural and cultural setting and therefore result in local, short- and long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on car and/or bus access to Yosemite Valley would benefit these resources by reducing opportunities for visitor-related damage such as vandalism, erosion, and wear and tear. These measures could result in short-term or long-term, moderate, beneficial impacts to historic sites, structures, and landscapes. Site hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. This is highly unlikely because these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the Yosemite Valley design guidelines (NPS 2004c). The Merced River Plan's criteria and considerations would also apply. If the design is compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Interim limits in Yosemite Valley would allow for an increase in camping in the areas zoned 3A. No new parking or overnight accommodations would be added. The addition of new or redeveloped campgrounds in the Valley would not impact historic sites, structures, or landscapes. The interim limits would also allow for an increase in tour buses over current levels. Potential tour bus increases would have a negligible to minor adverse impact on historic sites structures and buildings, as these visitors typically stay on site-hardened areas, such as parking and adjacent roadside areas.

Impacts in the Gorge. Historic sites, structures, and landscapes in the Gorge segment include the Merced Canyon Travel Corridor and the remaining structures associated with the Yosemite Valley Hydroelectric Power Plant.

The effects of VERP management actions within the Gorge would vary by the action taken. The indicators that are most relevant to historic sites, structures, and landscapes include (1) length of social trails in meadows and (2) extent of and diversity of cover of riparian vegetation within the river corridor. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor-related damage, such as vandalism, erosion, and wear and tear. These measures could result in short-term or long-term, negligible to minor, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of picnic facilities or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. This is highly unlikely because these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the design guidelines. The Merced River Plan's criteria and considerations would also apply. If the design is compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, minor, beneficial effect on these resources.

Interim limits in the Gorge segment would maintain day-visitor parking at the existing levels; therefore, no new impacts are anticipated.

Impacts in El Portal. Historic sites, structures, and landscapes for El Portal consist of the Old El Portal cultural landscape, the Murchison (National Lead Company) structures, railroad houses, the chapel, the old store, the El Portal Market, the old hotel (Yosemite Institute administrative offices), Bagby Station, and other sites and structures related to early industry, homesteading, and tourism in the Merced River corridor. Some of these structures are privately owned or used only as National Park Service or park partner's administrative facilities. Because these structures are not open to the public, they are unlikely to experience adverse effects from visitor use.

The boundary for the El Portal segment of the river in Alternative 2 was based upon a quarter-mile boundary. The zoning proposed for the El Portal segment under Alternative 2 calls for Park Operations and Administration (3C) and Day Use (2C) north of the river. South of the river, existing developed areas are zoned 3C, undeveloped areas west of the levee are zoned 2C, and undeveloped areas east of the levee are zoned 2A (Undeveloped Open Space). Alternative 2 provides a total of 411 acres of Park Operations and Administration zoning (3C), 192 acres of Day Use zoning (2C), and 250 acres of Open Space zoning (2A).

The area zoned 3C could allow for the development of roads, interpretive facilities, administrative facilities and employee housing. The area zoned 2C could allow construction of new day use facilities such as bicycle trails, restrooms, picnic tables, and paved trails. The area zoned 2A could allow construction of unpaved trails and limited interpretive signs.

Under Alternative 2, interim limits would not allow for any increase in parking, visitor services, or any additional park facilities above current levels. In the long term, the proposed boundary and

zoning designations for the El Portal segment is likely to result in additional development or redevelopment within the 3C zones, but the 2C and 2A zoning along much of the corridor would substantially limit new development in El Portal. Increased development north of the river could adversely affect the Old El Portal Historic Landscape if the new design is incompatible with the character of the landscape. Likewise, additional development could increase the number of visitors, employees, and residents exposed to these resources and therefore increase the likelihood of damage such as vandalism, erosion, and wear and tear. The 3C zoning south of the river at the trailer village could result in increased development on or near historic sites and structures. Increased numbers of visitors, employees, and residents exposed to these resources could adversely affect historic sites and structures.

The areas zoned Day Use (2C) south of the river would allow for development of trails, restrooms, and picnic areas. The areas zoned Open Space (2A) would allow for minimal development. The additional development could adversely affect historic sites within the segment due to the increase in visitor contact with these resources. However, the potential actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and design guidelines. Therefore, the adverse effects of new development would likely be local, long term, and negligible. Conversely, if the new facilities reduce the likelihood of visitor- or employee-related damage to historic sites then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Implementation of VERP within the El Portal segment would include monitoring of the indicators identified for areas zoned 2A, 2C, and 3C. The most relevant indicator to historic sites, structures, and landscapes in El Portal is extent of and diversity of cover of riparian vegetation within the river corridor. The effects of management actions would vary by the action taken. Educational measures are expected to result in local, short-and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor- or employee-related damage such as vandalism, erosion, and wear and tear. These measures could result in short-term or long-term, moderate, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of picnic facilities or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, the potential actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and design guidelines. The Merced River Plan's criteria and considerations would also apply. Therefore the adverse effects of new development would likely be local, long term, and negligible to minor. Conversely, if the design is compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor- or employee-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, local, long-term, minor, adverse impacts and local, short- and long-term, moderate, beneficial impacts on historic sites, structures, and landscapes could occur, depending on future actions that could be implemented under this alternative. Adverse effects would be reduced in intensity under Alternative 2 by the application of more stringent zoning within the larger, revised river corridor boundary (as compared to Alternative 1), which would require the application of a consistent set of criteria and considerations (as described under the Alternative 1 analysis) to a

larger area. The implementation of a VERP program could have long-term moderate, beneficial impacts to historic sites, structures, and landscapes and local, long-term, negligible to minor, adverse impacts depending on the management action taken.

Impacts in Wawona. Historic sites, structures, and landscapes in Wawona include the Washburn cultural landscape, the Chowchilla Mountain Road, Civilian Conservation Corps structures, the Wawona Covered Bridge, the Wawona Hotel (a National Historic Landmark), and the Pioneer Yosemite History Center. Many relocated, individually listed National Register historic structures comprise the Pioneer Yosemite History Center.

The Wawona segment is primarily zoned for low-intensity visitor use, with very limited areas for higher intensity uses (e.g., the golf course, Pioneer Yosemite History Center). Therefore, management actions taken to address VERP monitoring are likely to focus on more restrictive measures, as opposed to measures such as site hardening. The indicators that are most relevant to historic sites, structures, and landscapes in Wawona include (1) length of social trails in meadows and (2) extent of and diversity of cover of riparian vegetation within the river corridor. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and social trails, are expected to improve the natural and cultural setting and therefore would result in local, short- and long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor-related damage such as vandalism, erosion, and wear and tear. These measures could result in short-term or long-term, minor to moderate, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on historic landscapes, but any new design would be compatible with the historic landscape character. If the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, minor to moderate, beneficial effect on these resources.

In the area below Wawona, which is zoned for Undeveloped Open Space (2A+), VERP management to address the number of people and social trails would likely be focused on education and more restrictive measures to reduce visitor levels and restore the natural resources. Site hardening would not be appropriate in this area. Education efforts to limit the number of visitors and reduce impacts to resources are expected to have long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as enforced limits on the number of people accessing the area, would benefit the cultural ORV by decreasing the likelihood of visitor-related damage such as vandalism, erosion, and wear and tear.

Interim limits in the Wawona segment would allow for an increase in employee housing in the areas zoned Park Operations and Administration (3C). No new parking, overnight visitor accommodations, or camping would be added. New employee housing could adversely impact historic sites, structures, and landscapes resources. However, the potential actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and design guidelines. Therefore the adverse effects of new development in Wawona would likely be local, long term, and negligible to minor. Conversely, if the design is compatible with the historic landscape character and if the new facilities reduce the likelihood of visitor or employee-related damage to historic sites, structures,

and landscapes, then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Summary of Alternative 2 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement, Yosemite National Park Design Guidelines, and federal regulations such as the National Historic Preservation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

VERP would provide a suite of data to help monitor and preserve historic sites, structures, and landscapes. Implementation of management actions to address information from VERP monitoring is expected to improve natural and cultural conditions within the corridor. The improvements to the natural setting and reduced crowding and congestion would likely provide benefits to historic sites, structures, and landscapes within the corridor due to a decrease in visitor-related impacts such as vandalism, erosion, and wear and tear. If restrictive management actions are required to achieve these conditions, there would be moderate benefits to these resources related to a reduction of visitor-related damage. Implementation of the larger river corridor boundary and management zones in El Portal under Alternative 2 would result in less potential for development and would have a minor, beneficial effect on historic sites, structures, and landscapes or a minor to moderate, beneficial impact if development is designed to protect these resources.

Under Alternative 2, overall visitor numbers in the future would likely be lower than under Alternative 1. The implementation of the VERP program, based on the management zoning and other elements developed in the Merced River Plan, would result in long-term, minor to moderate, beneficial impacts on historic sites, structures, and landscapes and potentially long-term, minor, adverse effects on these resources related to increased development in some areas.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1. Overall, these cumulative actions in combination with Alternative 2 could have a net long-term, moderate, adverse impact on historic sites, structures, and landscapes within the Merced River corridor

Impairment

Because Alternative 2 is expected to have minor, adverse effects on historic sites, structures, and landscapes, this alternative is not expected to impair the park's historic resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in "no effect" to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Any future actions allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Visitor Experience

Analysis

The following discussion provides an overview of the types of impacts to recreation, interpretation and orientation, visitor services, and wilderness experience that could occur within each segment of the Merced River corridor under Alternative 2. Effects on visitor experience from the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on the visitor experience. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to the visitor experience associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to the visitor experience are expected to be minor to moderate, and adverse.

Recreation

Analysis

The following discussion provides an overview of the types of impacts to recreational resources that could occur within each segment of the Merced River corridor from implementation of the existing user capacity management program along with interim facility limits, bus limits, and implementation of the VERP program. Effects on recreation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Recreation ORVs in the Wilderness segment include outstanding opportunities for solitude along the river, primitive and unconfined recreation, and recreational opportunities such as day hiking, backpacking, horseback riding and packing, camping, and the enjoyment of natural river sounds.

Under Alternative 2, park management would implement interim facility limits which would limit construction of any new facilities (trails or campgrounds) in the wilderness. Since wilderness areas are managed for minimal facilities, this would not be expected to result in any impacts on recreation in this area. In addition, park management would implement the VERP program outlined in Chapter II, along with existing user capacity policies, such as the use of a wilderness trailhead quota system. Implementation of the VERP program would result in additional monitoring of indicators in wilderness areas, in addition to existing WIMS monitoring. (The impacts of the Wilderness Trailhead Quota System and WIMS, as described for Alternative 1, apply to this alternative as well).

Implementation of VERP would include adoption of the indicators and standards in table II-5. Indicators have been selected to provide overall information on the health of resources within the area. The number of encounters with other people and numbers of people recreating within the River Protection Overlay relate directly to the opportunities for solitude in wilderness areas and the ability to maintain the primitive character of the wilderness experience. Compliance with these standards would ensure protection of the recreation ORVs. If the standards for encounters and numbers of visitors within the River Protection Overlay are not met, management actions

would be required to bring these visitor experience conditions back within the established standard in order to protect and enhance the recreation ORVs.

Management actions taken to address the VERP standards could range from educating visitors about less used areas, to more restrictive measures such as reducing certain trailhead quotas, reducing accommodations at Sierra High Camps, or requiring and enforcing specific wilderness itineraries. Additional management actions that could be taken in the heavily used 1C zone would include restricting day use, such as requiring permits for day hikers, limiting day use access to guided groups, or reducing infrastructure (such as the cables at Half Dome).

The impacts of the management actions would vary depending on the action, although all of the actions would be designed to address the number of other visitors encountered and to improve opportunities for solitude. Management actions such as visitor education would be expected to reduce impacts by encouraging more dispersion of visitors within wilderness areas. Educational efforts would be expected to result in local, short- and long-term, negligible to minor, beneficial impacts on the recreational experience and the recreation ORVs, in terms of the opportunities for solitude. More restrictive measures, such as reducing trailhead quotas, restricting stock use, limiting day-use access in heavily used areas to users with permits or guided groups, and other restrictive measures would be expected to have local, long-term, minor to moderate, beneficial effects on the quality of recreation and the recreation ORVs in these areas in terms of opportunities for solitude. These more restrictive measures could, however, result in local, long-term, moderate to major, adverse effects to visitors unable to access recreation in these areas.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor, coupled with the existing trailhead quota system that is already in place, implementation of the VERP program in wilderness areas would be expected to have a local, long-term, minor to moderate, beneficial impact on the recreation experience and the recreation ORVs in terms of opportunities for solitude, and a local, long-term, moderate to major, adverse effect on those visitors unable to access recreational opportunities due to trailhead quota reductions or restrictions on day visitors in wilderness areas. Although the potential for decreased access would reduce recreational opportunities for some visitors, overall the protection of the wilderness resources and the solitude of the wilderness experience would be expected to result in protection and enhancement of the recreation ORVs.

Impacts in Yosemite Valley. The recreation ORVs in Yosemite Valley include opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking. Under Alternative 2, park management would implement the VERP program, and would adopt interim facility capacity limits until VERP provides sufficient information to guide user capacity management.

Since the interim facility limits would be set at close to existing levels, but with an increase in camping and bus numbers, there would be an increase in recreation access and opportunities. The effect on recreation would be local, short-term, minor, and beneficial in regards to recreation access and opportunities. Access to the spectrum of recreational opportunities would be maintained under these interim facility limits.

Under the VERP program, monitoring of indicators would provide information to management regarding the conditions of resources and recreation ORVs. Management actions would be taken when required to ensure that all established standards were met and the ORVs protected. In

particular, indicators related to the number of people recreating in the River Protection Overlay and the traffic indicator would provide information regarding the quality of visitor experience in Yosemite Valley. Management actions taken under VERP could range from increasing visitor education, to restricting access to sensitive areas, restricting or limiting activities (swimming, picnicking, etc.) in specific areas, to constructing boardwalks to allow access to sensitive areas while protecting the natural resources. Management actions may also include closing and restoring areas adversely affected by visitor use. Management actions may differ depending upon which zone is affected. In Discovery (2A) zones, management actions are more likely to be restrictive of levels and types of visitor use, as these areas typically are more sensitive to visitor impacts and are managed for lower visitor concentrations. Management actions taken to address standards in more developed zones (2C through 3B) may focus more on education and site hardening, as these areas have been identified as being appropriate for higher levels of visitor use.

The effects of management actions to address VERP standards would vary by the action. All actions would be designed to address the adverse conditions noted, while protecting the recreation ORVs by maintaining visitor access to a spectrum of river-related recreational activities in Yosemite Valley. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and water pollution would be expected to result in improvements to the natural setting, without adverse effects on visitor freedom. Educational measures related to traffic congestion would be aimed at encouraging mass transit or other means of reducing traffic congestion, which, based on recent visitor surveys (Gramann 1992, ORCA 2000, Manning et al. 1999a,b), is one of the most negative factors affecting visitor experience. Educational measures would be expected to result in local, short- and long-term, negligible to minor, beneficial effects on recreation. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on car and/or bus access to Yosemite Valley, would benefit the natural setting and reduce traffic congestion, but would also result in some loss of visitor freedom and opportunities. These restrictions would be designed to maintain the spectrum of recreational opportunities encompassed by the recreation ORVs, although the use levels for some activities may be reduced. The intensity of the effects of these restrictions on recreation would depend upon their extent and duration. The beneficial effects of reduced traffic and congestion on visitor experience would be minor to major, depending upon the level of improvement in traffic congestion on busy days. Restrictions on car and bus access would also result in moderate to major, adverse effects on those visitors unable to access the Valley in their preferred manner (private vehicles) or at their preferred time. Therefore, the effect of restrictions on recreation would range from local, short- or long-term, minor, beneficial and adverse effects on recreation for short-term restrictions, to moderate to major, beneficial and adverse effects for long-term widespread restrictions. Site-hardening activities, such as the construction of boardwalks, picnic facilities, or roadway improvements, could result in some adverse effects on the natural environment, but would be limited to areas designated for higher levels of development and use and therefore would be expected to result in local, long-term, minor, beneficial effects to recreation in these areas.

Overall, Alternative 2 would be expected to have both beneficial and adverse effects on the visitor experience. Where education, site hardening, and other nonrestrictive management actions are used to address the standards under VERP, the effect on recreation is expected to be long-term, minor to major, and beneficial. Management actions that result in long-term, broad-based restrictions on visitor transportation options, types of activities, and levels of use could also have long-term, minor to major, adverse impacts on visitors unable to gain access on any particular

day. All management actions would be designed to address any adverse conditions identified through the VERP process while protecting all of the ORVs, including the spectrum of recreational opportunities encompassed in the recreation ORVs. Therefore, implementation of Alternative 2 would be expected to maintain visitor access to a broad spectrum of recreational opportunities in Yosemite Valley and protect the recreation ORVs.

Impacts in the Gorge. The recreation ORVs for the Gorge segment are related to the opportunities for a spectrum of recreation opportunities.

The interim facility limits in the gorge would be set at existing levels. Since use levels in the gorge are below the existing facility capacity, potential growth in visitor use is not expected to affect access to recreational opportunities in this area. Therefore, the limits would not be expected to have any effect on access to recreational opportunities in the gorge compared to Alternative 1.

Under the VERP program, management actions would be taken when required to ensure that all established standards were met and the ORVs protected. Management actions in the gorge could range from increasing visitor education, restricting access to sensitive areas, restricting or limiting activities within the river corridor, or closing areas for restoration.

The effects of these management actions within the gorge would vary by the action taken. Educational measures would be expected to result in local, short- and long-term, negligible to minor, beneficial effects. Over time, if use levels increased, more restrictive measures, such as limits on vehicle access and parking, limits on activities near the river, or overall reduced visitor levels, would be expected to reduce visitor opportunities and freedom, while providing for a less crowded and more natural experience for those who are recreating there. These restrictions would be designed to maintain the spectrum of recreational opportunities encompassed by the recreation ORVs, even though the use levels for certain activities may be reduced. The intensity of the beneficial effects would depend upon the level and duration of restrictions. The adverse effects of the restrictions would also depend on their duration, as well as on whether the restrictions were selective in terms of areas and activities, or were more broad-based, such as an overall reduction in visitors allowed through the park entrance stations. Short-term, selective restrictions would be expected to result in local, short-term negligible to minor, adverse effects on recreational access and visitor freedom. Longer-term and more broad-based restrictions could result in long-term, moderate, adverse effects on certain visitors due to reduced access and visitor freedom. Site hardening, such as the construction of parking or picnic facilities, would have local, long-term, minor, beneficial effects on recreation by providing for appropriate levels of visitor facilities within those areas designated for higher levels of visitor use while protecting other park resources.

Overall, Alternative 2 would be expected to have local, long-term, negligible to minor, beneficial impacts on visitor experience related to reduced traffic and crowding and reduced impacts to the natural environment. Management actions that achieve these goals through education and site hardening would have local, long-term, minor, beneficial effects on recreation. Management actions that are more restrictive could have local, short- or long-term, minor to moderate, adverse effects on recreation and visitor experience through decreased access, a decrease in the level of use for some activities, and reduced visitor freedom. All management actions would be designed to address any adverse conditions identified through the VERP process while protecting all of the ORVs, including the spectrum of recreational opportunities encompassed by the recreation

ORVs. Therefore, implementation of Alternative 2 would be expected to maintain visitor access to diverse recreation opportunities and protect the recreation ORVs.

Impacts in El Portal. Under Alternative 2, the boundary for the El Portal segment of the river would be based upon a quarter-mile boundary on both sides of the river. The zoning for the El Portal corridor under Alternative 2 calls for primarily park administrative uses (3C) north of the river with some day use (2C) zoning, and primarily day use (2C) and open space (2A) on the south side of the river with administrative use (3C) zoning in existing developed areas. This boundary is wider than the boundary under Alternative 1 and could result in less development in areas that are currently outside the boundary but that would be included within this wider boundary. The areas within the corridor that would be zoned 3C would have the potential to be developed as administrative facilities, but only if these facilities can meet the criteria for construction within the river corridor (protection of the ORVs and compliance with the other elements of the Merced River Plan). Development of additional administrative facilities would not be expected to adversely affect access to or opportunities for recreational activities, since these areas are not currently used for access to recreation. Since there are no existing visitor facilities on National Park Service lands in the El Portal Administrative Site, visitor use is limited within the corridor, and recreational activities within this area are focused on the river itself, the proposed boundary and zoning are expected to have a long-term, local, negligible, beneficial effect on access to recreation, the quality of the visitor experience, and the recreation ORVs within this segment.

Since the interim facility limits on day-visitor parking in El Portal would be set at existing levels, and access to recreation in El Portal is currently below the parking capacity, the interim limits are not expected to result in any effect on recreation access in El Portal.

Alternative 2 would result in the implementation of the VERP program within the El Portal segment. Management actions taken could range from implementing educational measures or reducing facilities such as parking, to restricting certain activities or closing specific areas.

The effects of management actions would vary by the action taken as described above. Educational measures would be expected to result in local, long-term, negligible, beneficial effects on recreation through improvements to the natural setting. More restrictive measures would be expected to adversely affect recreational opportunities, but the duration and the intensity would depend upon whether the restrictions are short- or long-term, and whether they are selective or broad-based. The restrictions would be designed to maintain the spectrum of recreational opportunities encompassed by the recreation ORVs, although use levels of some activities could be reduced. Due to the small number of visitors using this segment, restrictive measures are unlikely in the short term. If use levels increased, the restrictive measures would be expected to result in long-term, negligible to minor, adverse effects on recreation and visitor experience. Site hardening, such as the construction of parking or picnic facilities, could increase opportunities for visitor use of the area and could have local, long-term, minor, beneficial effects on access to recreation in this area.

Overall, Alternative 2 would be expected to have local, long-term, minor, beneficial effects or local, short- or long-term, minor, adverse effects on recreation and visitor experience, depending on the management action. Because all management actions would be designed to address any adverse conditions identified through the VERP process while protecting all of the ORVs, including recreation, implementation of Alternative 2 would be expected to protect the recreation ORVs.

Impacts in Wawona. The recreation ORVs for Wawona relate to the spectrum of river-related recreational activities available, from nature study to photography to hiking. Below Wawona, the recreation ORVs are related to outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities within this area include hiking, fishing, and whitewater kayaking. There is no recreation ORV for the Wawona Impoundment segment.

Since the interim facility limits on visitor facilities and bus limits would be set at close to existing levels, the interim facility limits would not be expected to affect access to recreation opportunities in the short-term.

Under Alternative 2, park management would implement the VERP program to provide information on the condition of resources and the ORVs. The effects of management actions taken in Wawona would range from minor to moderate and could be both beneficial and adverse, as described above for Yosemite Valley. In the area below Wawona, restrictive measures such as enforced limits on the number of people accessing the area would benefit the ORVs by providing more opportunities for solitude and enjoyment of natural river sounds, but could also result in adverse effects to some visitors by limiting access.

Overall, Alternative 2 would be expected to have long-term, minor to moderate, beneficial effects on recreation if park management implements educational measures to reduce numbers of people and impacts to natural resources. More restrictive measures, such as enforcing limits on the number of people accessing the area, would result in minor to moderate, adverse effects on some visitors who would not gain access to recreational opportunities. The intensity would depend upon the level and duration of restrictions. All management actions taken would be designed to protect the recreation ORVs by maintaining visitor access to the spectrum of recreational opportunities encompassed by the recreation ORVs.

Summary of Alternative 2 Impacts. Under Alternative 2, park management would implement interim facility limits and bus limits to manage visitor use levels until the VERP program was fully implemented. Since these interim limits would be set close to existing levels, with some increase in camping and bus levels in the Valley, the impact of the interim facility limits would be local, short-term, negligible to minor, and beneficial. Management actions taken under VERP would be expected to improve natural and social conditions within the corridor. Improvements to the natural setting and reduced crowding and congestion would be expected to provide benefits to recreational and visitor experiences within the corridor. If restrictive management actions are required to achieve these natural and social conditions, however, there would also be adverse effects on the visitor experience related to decreased access to recreational opportunities. The duration and intensity of these adverse effects would depend upon the duration and extent of the restrictive measures. These measures would be designed to maintain the spectrum of recreational opportunities encompassed by the recreation ORVs, although the use level of some activities may decrease. Overall, the measures would be expected to benefit visitor experience and to protect access to the spectrum of recreational opportunities that make up the recreation ORVs. The El Portal boundary would similarly benefit visitor experience and protect recreation access by maintaining access points as day use areas.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are summarized under Alternative 1. These cumulative projects would have a long-term, negligible to minor, beneficial impact on recreation, because the beneficial impacts associated with increased visitor access and expanded recreational opportunities would be partially offset by the adverse impacts associated with the removal of specific recreational opportunities.

Alternative 2 and the cumulative projects within and in the vicinity of Yosemite National Park would result in long-term effects on recreation and visitor experience in the corridor that are both beneficial and adverse. Improvements to the natural setting and reduced crowding and congestion would benefit recreational experiences. However, restrictions implemented to protect the ORVs and other park resources could adversely affect recreational opportunities through reducing visitor access to them. The intensity of effects would depend on the type of restrictions implemented. More restrictive measures are likely to result in greater benefits to quality of visitor experience (associated with natural setting and congestion), but also greater adverse effects on the visitor experience.

Interpretation and Orientation

Analysis

The following discussion provides an overview of the types of impacts to interpretation and orientation opportunities that could occur within each segment of the Merced River corridor under Alternative 2. Effects on interpretation and orientation opportunities from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Implementation of interim facilities limits is not expected to affect interpretation and orientation in the Wilderness. Under Alternative 2, implementation of VERP could result in management actions taken to reduce the level of use in some areas, if social standards (such as the number of parties encountered or the number of people recreating in the River Protection Overlay) or other standards are exceeded. If management actions were taken to reduce levels of use in the wilderness, interpretive programs in the wilderness (such as ranger talks at Little Yosemite Valley Backpackers Campground and ranger-led loop hikes) could be reduced from existing levels. This could result in a local, short- or long-term, negligible to minor, adverse effect on visitor experience from reduced access to interpretative programs in wilderness areas as compared to the opportunities under the No Action Alternative.

Impacts in Yosemite Valley. Under Alternative 2, interim facility limits would be in place until the VERP program is fully implemented. Since these limits would be set at close to existing levels, with some increases in camping and bus levels, they would likely have no effect on access to orientation and interpretation programs.

The effects associated with VERP would depend upon the management actions implemented. If park managers use education to change visitor behaviors, there could be a demand for additional orientation and interpretive programs designed to change visitor behaviors and reduce impacts. This could result in a local, long-term, minor, beneficial effect on orientation and interpretive programs. If more restrictive measures are implemented, particularly restrictions on visitor access to areas that are currently used for interpretive programs, there could be a local, long-term, minor, adverse effect on access to orientation and interpretative programs.

Overall, implementation of Alternative 2 is expected to result in local, long-term, negligible, beneficial impact on visitor experience related to changes in access to orientation and interpretive programs in Yosemite Valley as compared to Alternative 1.

Impacts in the Gorge. Implementation of Alternative 2 would have no effect on interpretation and orientation in the Gorge segment because no interpretive programs are currently offered in the gorge.

Impacts in El Portal. Management zones proposed for the El Portal segment include park administration (3C), day use (2C), and open space (2A). It is not anticipated that interpretive programs would be provided in El Portal in areas zoned 3C. Interpretive programs could be provided in 2C areas in El Portal in the future. This would result in a local, long-term, negligible to minor, benefit to orientation and interpretation opportunities.

The effects from VERP would depend on the management actions implemented. Effects on interpretive programs could be beneficial if park management increases education to reduce any noted impacts. Effects could be adverse if visitor levels are restricted. Overall, the effect on interpretive programs in El Portal would be expected to be local, long-term, negligible to minor, and beneficial or adverse

Impacts in Wawona. Under Alternative 2, interim facility limits and bus limits would be in place until the VERP program is fully implemented. Since these facility limits and limits would be set at existing levels, they would not affect access to orientation and interpretation programs in Wawona.

Implementation of management actions under VERP could increase or decrease access to orientation and interpretive programs depending on the types of measures implemented. Overall, implementation of Alternative 2 is expected to result in a local, long-term, negligible, beneficial effect on orientation and interpretive programs as compared to Alternative 1.

Summary of Alternative 2 Impacts. Implementation of interim facility limits and bus limits are not likely to have any short-term effects on access to interpretive and orientation programs in the corridor. Implementation of VERP under Alternative 2 could have local, long-term, minor, beneficial or adverse effects on the access to orientation and interpretive programs, depending upon the management actions taken under VERP. Overall, the impact to these programs is expected to be negligible.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects in the Yosemite region are described under Alternative 1. The cumulative projects would have a long-term, minor, beneficial impact, because the beneficial impacts associated with an increase in interpretation and orientation programs and services would only be partially offset by potential reductions of interpretive programs in the wilderness.

Alternative 2 together with the cumulative projects would result in a long-term, minor, beneficial impact because the availability and diversity of interpretation and orientation programs and services would increase through some of the cumulative projects. Alternative 2 could result in management actions that increase or reduce access to and availability of interpretation and orientation programs and services, but the overall effect is expected to be negligible.

Visitor Services

Analysis

The following discussion provides an overview of the types of impacts to visitor services that could occur within each segment of the Merced River corridor under Alternative 2. Effects on visitor services from the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Under Alternative 2, implementation of interim facility limits are not expected to affect visitor services in the wilderness compared to Alternative 1. Implementation of VERP could result in management actions to reduce the level of use in some areas, if standards are not being met. Use levels could be reduced through changes to wilderness trailhead quotas or changes to services available in wilderness areas, such as campgrounds. Since wilderness areas currently have low levels of visitor services, Alternative 2 could result in local, short- or long-term, negligible to minor, adverse effects on visitor experience through reduced services and opportunities in wilderness areas if VERP standards were not being met.

Impacts in Yosemite Valley. Under Alternative 2, interim facility limits and bus limits would be in place until the VERP program is fully implemented. Since these limits would allow for an increase in camping facilities compared to the No Action Alternative, there would a local, long-term, minor, beneficial effect on visitor services in Yosemite Valley related to the interim limits.

Alternative 2 would result in implementation of VERP in addition to the park's existing user capacity programs. Management actions taken to achieve the VERP standards could range from education, to restricting certain uses, to restricting use levels in specific areas or throughout the Valley. Impacts on visitor services would depend upon what types of management actions were implemented. Management actions that restrict visitor use levels within certain areas or Valleywide could result in reductions of visitor services, such as camping, lodging, and food services. However, management actions taken in areas zoned for intensive use could include additional visitor services, such as increased food service facilities or day use facilities. Regardless of the management actions taken, it is anticipated that park management, park partners, and the primary park concessioner would adjust visitor services provided to meet the level of visitor demand that would result from park management decisions on activity levels throughout the Valley. Therefore, the impacts of Alternative 2 on provision of and access to visitor services would be expected to be local, long-term, minor, and adverse, since visitors would still have access to visitor services, but there could be limitations or restrictions in certain areas.

Impacts in the Gorge. Under Alternative 2, interim facility limits would be set at existing levels and would not affect access to visitor services, which are very limited in the gorge. Management actions taken to address VERP indicators and standards could result in either reductions or expansions of the picnic and parking facilities within the gorge. It is expected that the level of these facilities would be adjusted to meet the level of visitor demand that would result from park management decisions for this zone. Therefore, there would be no effect on visitor services in the Gorge segment under Alternative 2.

Impacts in El Portal. The El Portal river corridor boundary and management zoning proposed under Alternative 2 includes areas zoned for administration, day use, and open space. This zoning would allow for limited visitor facilities. Since visitor use levels in this segment are low, and most

visitor facilities are provided on private lands, the boundary and zoning would only be expected to result in local, long-term, negligible, benefits to visitor services compared to Alternative 1.

Implementation of VERP could result in management actions that increase or decrease visitor levels and visitor services in El Portal. Again, the effects could be beneficial or adverse but would likely be negligible compared to Alternative 1.

Impacts in Wawona. Under Alternative 2, interim facility limits and bus limits would be in place until the VERP program is fully implemented. Since these limits would be set at existing levels, they would not affect visitor services in Wawona compared to Alternative 1.

Alternative 2 would implement the VERP program in addition to the park's existing user capacity programs. Management actions taken to address the VERP standards and indicators could vary as described above. Management actions which restrict visitor use levels within certain areas could result in reductions of visitor services, such as camping and lodging. However, since the lodging and camping areas are located in areas zoned for intensive use, management actions taken in these areas could focus more on visitor education to change behaviors, site hardening, and other nonrestrictive actions. Regardless of the management actions taken, it is anticipated that park management, park partners, and the primary park concessioner would adjust the services provided to meet the level of visitor demand that would result from park management decisions on local activity levels. Therefore, the impacts of Alternative 2 on provision of and access to visitor services would be expected to be local, long- term, minor, and adverse, since visitors would still have access to visitor services, but there could be limitations or restrictions in certain areas.

Summary of Alternative 2 Impacts. Interim facility limits and bus limits are expected to have a short-term, minor, beneficial effect on visitor services in Yosemite Valley. These limits would not be expected to affect visitor services in other segments. Actions taken under VERP would be expected to result in local, long-term, negligible to minor, adverse impacts on access to and the availability of visitor services. Visitors would still have access to overnight camping and lodging opportunities, but there could be long- or short-term restrictions put on uses in some areas to address resource impacts.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. The cumulative projects would have a long-term, minor to moderate, adverse impact on visitor services due to the overall reduction of overnight accommodations in Yosemite Valley and potential additional restrictions on activities and facilities in the wilderness. These adverse impacts would be partially offset by improving parking and traffic circulation in Yosemite Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Alternative 2 together with the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse impact on visitor services because of the potential reduction of overnight accommodations in Yosemite Valley and potential additional restrictions on activities and facilities in the wilderness. This adverse impact would be partially offset by improving parking and traffic circulation within the Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Wilderness Experience

Analysis

The following discussion provides an overview of the types of impacts to the wilderness experience that could occur within the Merced River corridor under Alternative 2.

Under Alternative 2, park management would address user capacity through interim facility limits and VERP. The interim facility limits would not result in any effects on the wilderness experience as compared to Alternative 1. VERP management actions within wilderness areas would be designed to ensure that wilderness conditions are maintained at their desired condition. Management actions to achieve this goal could include restricting use of certain areas, limiting activity levels through reduced trailhead quotas, reducing use of backpacker campgrounds, and implementing day use restrictions in heavily used areas like Little Yosemite Valley. These actions would only be taken if conditions were not meeting adopted VERP standards.

Overall, access to the wilderness within the Merced River corridor would continue to be managed under the current wilderness permit system, and primitive camping and opportunities for solitude would remain available. Management actions to reduce use levels, as described above, would have local, long-term, minor to moderate, beneficial effects on wilderness experiences in terms of the natural conditions and solitude, but could also have local, long-term, moderate to major, adverse effects on those visitors unable to gain access. Past park experience with management of wilderness areas suggests that the benefits of limited access in wilderness areas outweigh the adverse effects on recreational access, resulting in a net beneficial impact on wilderness experience when appropriate restrictions are imposed. Therefore, implementation of VERP under Alternative 2 would be expected to be local, long-term, negligible, and beneficial.

Summary of Alternative 2 Impacts. Alternative 2 would likely result in a local, long-term, negligible, beneficial impact on the wilderness experience related to implementation of management actions designed to ensure that wilderness conditions meet desired conditions.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. These cumulative projects would have a long-term, minor, beneficial impact on the wilderness experience, because the wilderness ecosystem would be improved and this effect would only be partially offset by the long-term, adverse impact of potential additional restrictions on activities and facilities in the wilderness.

Alternative 2 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a local, long-term, negligible to minor, beneficial impact to the wilderness experience, because the beneficial improvements to the wilderness ecosystem would offset the potential additional restrictions on activities and facilities in the wilderness and the potential for decreased recreational access associated with management actions under VERP.

Social Resources

Land Use

Analysis

The following discussion provides an overview of the types of impacts to land use that could occur within each segment of the Merced River corridor under Alternative 2. The analysis for the

El Portal segment also describes the types of impacts to land use that could occur based on the adoption of the river corridor proposed under Alternative 2.

As described under Alternative 1, management zoning establishes future desired resource conditions, visitor activities and use levels, and appropriate facilities. Alternative 2 would implement the existing user capacity management program with interim limits and the VERP program. The indicators and standards under VERP are specifically designed to provide information to park management on whether the desired conditions in various management zones are met. Therefore, implementation of VERP is inherently consistent with existing management zoning and would have a beneficial effect on land use within the river corridor. Alternative 2 would not be expected to result in any changes in land use within the park. Development in El Portal is discussed below.

Impacts to Wilderness. Implementation of Alternative 2, including the VERP program, would be consistent with the management zoning developed in the Merced River Plan and with the existing land uses in the Wilderness segments of the river corridor.

Impacts to Yosemite Valley. Implementation of Alternative 2, including the VERP program, would be consistent with the management zoning developed in the Merced River Plan and with the existing land uses in the Yosemite Valley segment.

Impacts to the Gorge. Implementation of Alternative 2, including the VERP program, would be consistent with existing management zoning and existing land uses in the Gorge segment.

Impacts in El Portal. Under Alternative 2, the park would adopt a river corridor boundary based upon a quarter-mile boundary north and south of the river in El Portal. This alternative would result in 192 acres of Day Use (2C), 411 acres of Park Operations and Administration (3C), and 250 acres of Open Space (2A), for a total of 853 acres within the corridor. Since facilities developed within the river corridor must meet stringent standards, this alternative could result in less overall development of residential and administrative facilities in the El Portal area, reducing the potential for adverse effects on land use as compared to Alternative 1. Overall, any potential development would be consistent with existing development in the area and with the adopted management zoning prescriptions.

Implementation of Alternative 2, the existing user capacity program with the addition of interim facility limits and VERP, would be consistent with existing management zoning and existing land uses.

Impacts to Wawona. Implementation of Alternative 2 would be consistent with existing management zoning and existing land use in Wawona.

Summary of Alternative 2 Impacts. Under Alternative 2, the park would implement a VERP program in addition to the user capacity measures currently in use. Since VERP is based on achieving the goals defined in the park's management zones, implementation of Alternative 2 would be consistent with park management zoning within the river corridor. In El Portal, the proposed river corridor boundary and management zoning could result in a local, long-term, minor, beneficial effect on land use compared to Alternative 1.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable projects were described under Alternative 1. Overall, the cumulative projects would be expected to have local, long-term, minor to moderate, adverse effects on land use due to the potential for additional development of residential and administrative uses and a decrease in open space in the El Portal and Wawona areas. The impacts should be offset somewhat by the planning efforts underway on countywide planning and the El Portal Concept Plan.

The effects of Alternative 2 and the cumulative projects would result in local, long-term, minor, adverse cumulative effects on land use within the river corridor.

Transportation

Analysis

The following discussion provides an overview of the types of transportation impacts associated with Alternative 2. Because transportation services and facilities are not provided in wilderness areas, this analysis does not address impacts in the Yosemite Wilderness segments of the river corridor.

This alternative sets interim facility limits and bus limits to manage visitor use within the Merced River corridor. These limits approximately reflect existing conditions, with the exception of some increase in campsites in Yosemite Valley and a bus limit which would allow for an increase in buses from current levels to a maximum of 92 per day. Since the interim facility limits are set at close to existing levels, the effect on transportation would be minimal.

Implementation of the interim facility limits and bus limits would result in some increased traffic compared to existing levels due to increased camping and bus traffic levels. The park would potentially need to implement restricted access policies on a more frequent basis to enforce the interim facility limits. If visitation grows in the future, the VERP program which includes indicators and standards related to traffic, could result in management actions designed to bring traffic levels to acceptable standards.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program will include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards related to traffic were being violated, the park would implement management actions to return traffic conditions to acceptable levels consistent with VERP indicators. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation, or parking and transportation improvements, transportation conditions could be improved.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on transportation. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to transportation associated with redirection of visitors would be short-term, and variable in location and could occur in areas within or adjacent to the park. Therefore, potential impacts to transportation are expected to be minor to moderate, and adverse.

Impacts in Yosemite Valley. Implementation of the interim facility limits and bus limits for Yosemite Valley under Alternative 2 would require park management to ensure that day-visitor parking does not exceed the existing day-visitor parking capacity in the Yosemite Valley. Based on current use levels, day visitor access would need to be limited on about five weekend days in the summer. As discussed in the Transportation section of Chapter IV, the numbers of vehicles (both autos and buses) entering Yosemite Valley have distinct seasonal patterns. During the peak months of June through August vehicle traffic is much greater than in the remaining months of the year, particularly in the winter months between November through February. Bus traffic would also be expected to increase compared to current levels but would not exceed past peak levels of 92 buses per day.

The existing traffic bottlenecks, where high volumes of pedestrians cross major roadways, would continue to experience congestion during peak travel periods. During the peak visitation season, park staff would continue to direct visitors to available parking and manage vehicle and pedestrian traffic at several congested intersections. Park staff members would direct visitors to roadside parking areas when parking lots are full, but would limit the roadside parking to designated areas. During peak times, visitors would still experience delays in accessing recreation sites due to the time spent searching for parking, and congestion would continue to affect visitors and other travelers exiting the Valley via Northside Drive. The congestion would be negligibly greater than in Alternative 1, due to the small increases in traffic associated with this alternative. The congestion from private vehicle traffic would continue to delay the operation of the Yosemite Valley Shuttle system, reducing its effective capacity and causing overcrowding of the buses during peak times. Park management would likely need to implement restricted access to the Valley more frequently than under Alternative 1 to ensure that actual use is managed to existing parking facilities.

Under Alternative 2, for the long term there would be local, negligible to minor, adverse impacts on the transportation system in Yosemite Valley compared to Alternative 1 due to the increase in traffic associated with the added campsites. However, traffic congestion will be monitored as part of the VERP process through measurable indicators and standards. If indicators and standards were not being met, park management would implement management measures that would change visitation patterns and/or transportation conditions in the Valley. The impact of these changes would depend on the specific measures implemented. For example, management actions that lower visitor levels during peak periods would result in local, short- to long-term, minor to moderate, beneficial effects on transportation, depending on the duration and intensity of the restrictions. In addition, management actions that improve transportation or parking facilities would also result in local, long-term, minor to moderate benefits, depending on the specific improvements.

Overall, Alternative 2 would likely have local, short-term, negligible to minor, adverse effects on traffic, but local, long-term, minor to moderate, benefits on traffic resulting from implementation of VERP measures to address parking and traffic congestion in the Valley during peak periods.

Impacts in the Gorge. Under Alternative 2, the interim facility limits would be set based on the existing designated parking supply in the Gorge segment. When restricted access policies are implemented for Yosemite Valley, the parking spaces in the Gorge are likely to be occupied more often as use is displaced away from the Valley. This would occur more frequently under Alternative 2, as a result of the interim facility limits in Yosemite Valley. The existing parking

supply in the Gorge would limit the degree to which displaced users from the Valley could be accommodated. If park visitation increases, parking areas in the Gorge could be filled more regularly, resulting in a short-term, local, negligible, adverse effect on transportation in the Gorge.

The effects of VERP would depend on the management actions taken to address conditions that do not meet standards. Implementation of management actions designed to address the parking capacity standard under VERP would be likely to result in local, short- or long-term benefits to transportation in the Gorge segment. The intensity of the effect would depend on the measures implemented.

Under Alternative 2, for the short term there would be local, negligible, adverse impacts on the transportation system of the Gorge segment. In the long-term, there could be local, beneficial effects on transportation related to implementation of VERP. The intensity of these effects would depend on the specific measures implemented.

Impacts in El Portal. The proposed river corridor boundary and management zoning in El Portal under Alternative 2 include areas zoned for Park Operations and Administration (3C) and Day Use (2C) and Open Space (2A). Development of employee housing and day-use parking would be allowed in these areas, but would only be developed within the corridor if all conditions of the Merced River Plan and other Wild and Scenic Rivers Act requirements were fulfilled. The development potential would be less than under Alternative 1. Therefore, the boundary and zoning proposed under Alternative 2 would be expected to have a local, long-term, negligible, beneficial effect on transportation in El Portal.

Under the proposed interim facility limits, parking in El Portal would be limited to existing parking spaces within this segment. Since the interim limits are set at current levels, they are not expected to affect transportation resources in El Portal in the short term.

Under Alternative 2, the implementation of VERP would be expected to result in management actions to address conditions that do not meet transportation or other adopted standards. These measures could include restrictions on use levels or activities, reductions in available parking, or increases in available parking. The effects on transportation resources would depend on the measures taken, but would overall be expected to be local, long term, negligible to minor, and beneficial.

Overall, Alternative 2 would be expected to result in local, short- and long-term, negligible to minor, beneficial impacts on the transportation system in El Portal.

Impacts in Wawona. Under Alternative 2, interim facility limits and bus limits would be implemented in Wawona. The interim limits and bus limits are set at close to existing levels, and park management would be required to manage use levels to these facility capacities. Displaced parking from the visitor parking lot at the Mariposa Grove would continue to affect transportation conditions in Wawona. Vehicle parking along the road shoulders of Highway 41 and Forest Drive would be limited to existing parking capacity under Alternative 2. Additional visitors who want to use facilities at Wawona, including the store and the Pioneer Yosemite History Center, may be displaced by the limits on overflow parking. Temporary access restrictions could be required during peak periods, resulting in local, short-term, negligible to minor, adverse effects on transportation in Wawona.

Under VERP, park management could implement management measures that would change visitation patterns and transportation conditions in Wawona. The impact of these changes would depend on the specific measures implemented. For example, management actions that lower visitor levels during peak periods would result in local, short- to long-term, minor to moderate, beneficial effects on transportation, depending on the duration and intensity of the restrictions. In addition, management actions that improve transportation or parking facilities would also result in local, long-term, minor to moderate benefits, depending on the specific improvements.

Under Alternative 2, in the short term there would be local, negligible to minor, adverse impacts on the transportation system of the Wawona area on those peak days when traffic levels are high during the summer months. Visitor traffic in this segment is much less during non-peak times of the year. Implementation of access restriction measures would mitigate this condition. In the long term, there could be local, minor to moderate, beneficial effects related to access and traffic congestion during peak periods, depending on the management actions implemented under VERP.

Summary of Alternative 2 Impacts. Implementation of interim facility limits and bus limits would likely result in local, short-term, negligible to minor effects on transportation associated with some increase in bus traffic and private vehicle traffic associated with camping facilities. Managing of use to these interim facility limits could result in more frequent implementation of restricted access policies when parking capacity is exceeded. Implementation of VERP would be expected to result in local, long-term, minor to moderate, beneficial effects on transportation within the river corridor, but the intensity of impacts would depend on the specific actions implemented to address VERP transportation and other indicators.

Cumulative Impacts

As described under Alternative 1, the past, present, and reasonably foreseeable future projects would result in local, long-term, minor to moderate, beneficial effects on transportation. When combined with Alternative 2, the cumulative effect would be local, long-term, minor to moderate, and beneficial, as the long-term benefits associated with VERP would be expected to outweigh the short-term, adverse effects associated with increased traffic and congestion.

Scenic Resources

Analysis

The following discussion provides an overview of the types of impacts to scenic resources that could occur within each segment of the Merced River corridor under Alternative 2.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have a beneficial effect on scenic resources. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to scenic resources associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to scenic resources is expected to be negligible to minor, and beneficial.

Impacts in Wilderness. Scenic ORVs in the Wilderness segments of the river corridor include views from the Merced River and its banks of the exposed bedrock riverbed, Merced Lake and

Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.

User capacity within the Wilderness segment would continue to be managed through the existing trailhead quota system and monitoring of wilderness resource conditions. Implementation of the VERP program would result in additional monitoring of indicators within the Wilderness segments.

Indicators have been selected to provide overall information on the health of resources within the Wilderness segments. Management actions associated with achieving standards would not affect the scenic ORVs or visitors' ability to view scenic ORVs in the Wilderness segments. Therefore, implementation of the VERP program overall is not expected to affect scenic resources and the scenic ORVs. Interim limits within wilderness areas of Yosemite do not call for new campgrounds or trails, and therefore would not affect the scenic ORVs.

Interim limits within wilderness areas of Yosemite do not call for new campgrounds or trails, and therefore would not affect the scenic ORVs.

Impacts in Yosemite Valley. Scenic ORVs within the Yosemite Valley segment include views from the Merced River and its banks of waterfalls and water features (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, and Bridalveil Falls and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rocks, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil) and forests.

If monitoring of the VERP indicators showed that standards were not being met, management actions would be taken to address potential impacts. The effects of management actions would vary by the action. Educational measures designed to change visitor behavior in ways that reduce vegetation trampling, riverbank erosion, and water pollution would improve the natural setting. These measures would not adversely affect specific scenic features or visitors' ability to experience scenery, and therefore are expected to result in local, short- and long-term, negligible, beneficial effects on scenic resources. Educational measures aimed at encouraging mass transit or other means of reducing traffic congestion would likely have a local, long-term, negligible, beneficial impact. More restrictive measures, such as limits on activities near the Merced River, reducing activity levels, or restricting automobile or bus access to Yosemite Valley, would benefit the natural setting, reduce traffic congestion, and could result in long-term, negligible, beneficial impacts to visitors' ability to observe scenery. Site-hardening activities (such as construction of boardwalks, picnic facilities, or roadway improvements) could result in adverse effects on the natural environment but would be limited to areas designated for higher levels of development and use. New or improved site design would follow the Yosemite Valley design guidelines (NPS 2004c). Because these guidelines require consideration of significant views in all new design, site-hardening activities would likely result in local, long-term, negligible to minor, beneficial effects to scenic resources in these areas.

Nonattainment of VERP standards would result in management actions to address the potential impacts. The effects of these management actions would vary by the action. Educational measures designed to change visitor behavior in ways that reduce traffic are expected to result in local, short- and long-term, negligible, beneficial effects on scenic resources. More restrictive measures, such as limiting activities near the river, reducing activity levels, or increasing enforcement of

regulations prohibiting wildlife exposure to human food, could result in long-term, negligible, beneficial impacts to visitors' ability to observe scenery. Site-hardening activities (such as the construction of roadway improvements or picnic facilities) in areas designated for higher-intensity uses could result in local, negligible to minor, beneficial effects on scenic resources.

Interim limits in Yosemite Valley would allow for an increase in camping in 3A zones. No new parking or overnight accommodations would be added. The increase in camping would have no effect on scenic resources or the scenic ORVs.

Overall, implementation of the VERP program with interim limits is expected to have a negligible benefit to scenic resources by reducing traffic congestion and crowding, conserving the natural environment, and providing better, less crowded, and less obstructed access to valued viewpoints. Where these goals are achieved through education, site hardening, and other nonrestrictive management actions, the effect on scenic resources is expected to be long term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions on visitor transportation options, types of activities, and levels of use could also have long-term, negligible to minor, beneficial impacts to scenic resources.

Impacts in the Gorge. Scenic ORVs for the Gorge segment of the river corridor include views from the Merced River and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.

Most areas of the Gorge segment are zoned 2A+, 2A, 2B, and 2D. If VERP monitoring indicated that standards in these zones were not being met, management actions would be implemented to address the potential impacts.

The effects of these management actions within the Gorge segment would vary by the action. Educational measures are expected to result in local, short- and long-term, negligible, beneficial effects. More restrictive measures, such as limiting activities near the river, reducing activity levels, or restricting automobile or bus access to Yosemite Valley could result in short-term or long-term beneficial impacts to visitors' ability to observe scenery. The effect of the restrictions would depend on their duration, and on whether the restrictions were selective in terms of areas and activities or more broad-based, such as an overall reduction in the number of visitors allowed through the park entrance stations. Short-term, selective restrictions would likely result in local, short-term, negligible to minor, beneficial effects on visitors' ability to experience scenic resources. Site hardening, such as the construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on the natural environment, but would be limited to areas designated for higher levels of development and use (zones 2D and 3C). New or improved site design would follow the Yosemite Valley design guidelines (NPS 2004c). Because these guidelines require consideration of significant views in all new design, site-hardening activities would result in local, long-term, negligible, beneficial effects to scenic resources in these areas.

Interim limits in the Gorge segment would maintain day-visitor parking at existing levels; therefore, no new impacts are expected to scenic resources or the scenic ORVs.

Overall, the implementation of the VERP program with interim limits is expected to have local, long-term, negligible, beneficial impacts on scenic resources related to reduced traffic and crowding and reduced impacts to the natural environment. Management actions that achieve these goals through education and site hardening would have long-term, negligible, beneficial

effects on scenic resources. Management actions that are more restrictive could also have local, short- or long-term, negligible, beneficial effects on scenic resources.

Impacts in El Portal. Scenic resources in the El Portal segment of the river corridor consist of views of the geologic transition between granite and metasedimentary bedrock along the canyon walls and distinct views of Chinquapin Fall.

The boundary for the El Portal segment of the river in Alternative 2 was based upon a quarter-mile boundary. The zoning proposed for the El Portal segment under Alternative 2 calls for Park Operations and Administration (3C) and Day Use (2C) north of the river. South of the river, existing developed areas are zoned 3C, undeveloped areas west of the levee are zoned 2C, and undeveloped areas east of the levee are zoned 2A (Undeveloped Open Space). Alternative 2 provides a total of 411 acres of Park Operations and Administration zoning (3C), 192 acres of Day Use zoning (2C), and 250 acres of Open Space zoning (2A).

The area zoned 3C could allow for the development of roads, interpretive facilities, administrative facilities and employee housing. The area zoned 2C could allow construction of new day use facilities such as bicycle trails, restrooms, picnic tables, and paved trails. The area zoned 2A could allow construction of unpaved trails and limited interpretive signs.

The proposed boundary and zoning designations for the El Portal segment is likely to result in additional development or redevelopment within the 3C zones, but the 2C and 2A zoning along much of the corridor would substantially limit new development in El Portal. Increased development north of the river could change the foreground views and decrease visibility of scenic resources. Zone 2C south of the river is intended to accommodate large groups, and visitors could expect moderate to high numbers of encounters with other users. Development of trails, restrooms, and picnic areas and an increase in visitor use could occur in zone 2C. The majority of the zoning south of the river is 2A, and would not result in any development or increase in visitor numbers that would affect scenic resources. Although additional development would likely result in a local, long-term, negligible, adverse effect on scenic resources within the El Portal segment, the development potential is lower under Alternative 2 than under Alternative 1. Therefore, Alternative 2 would result in a local, long-term, moderate, beneficial impact to scenic resources compared to Alternative 1.

Implementation of a VERP program within the El Portal segment would include monitoring of the indicators identified for zones 2A, 2C, and 3C. The effects of management actions would vary by the action. Educating visitors and employees to change their behavior related to activities that could adversely affect vegetation and water quality would likely result in local, long-term, negligible, beneficial effects on scenic resources. More restrictive measures (such as limits on activities near the river or reduced activity levels) would result in a negligible, beneficial effect on scenic resources. The duration and intensity of this effect would depend on whether the restrictions are short or long term and selective or broad-based. Conversely, these same measures could result in a local, long-term, negligible, adverse effect if they hinder visitors' ability to experience scenic resources. New or improved site design would follow the guidelines in the Yosemite Valley design guidelines (NPS 2004c). Therefore, site hardening (e.g., construction of parking or picnic facilities, increased employee housing, and increased development in the town center) could have local, negligible, long-term adverse effects on scenic resources in this area.

Interim limits in El Portal would allow for an increase in employee housing in the 3C zones. New site design would follow the design guidelines for Yosemite National Park and could therefore result in a local, negligible, long-term adverse effect on scenic resources in the El Portal segment.

Impacts in Wawona. The scenic ORVs for the Wawona segments of the river corridor include views from the Merced River and its banks of large pothole pools within slickrock cascades, old growth forest, meadows, Wawona Dome, and continual whitewater cascades in the deep and narrow river canyon below Wawona.

Implementation of VERP program throughout the Wawona segments would result in management actions to address conditions that do not meet the standards set for each zone. These management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas. The intensity of the measures taken would depend on the condition of the resources and the zoning of the area.

The Wawona segments would primarily be zoned for low-intensity visitor use, with very limited areas for higher-intensity uses (Wawona Golf Course, Pioneer Yosemite History Center). Therefore, management actions to address VERP monitoring would likely focus on more restrictive measures. Educational efforts in response to monitoring of natural resource and social conditions are expected to result in local, long-term, negligible benefits to scenic resources due to improvements to the natural environment. More restrictive measures, such as restrictions on activities or use levels in various areas, are also expected to result in negligible, beneficial effects on scenic resources.

In the area below Wawona, which is zoned for Undeveloped Open Space (zone 2A+), VERP management actions would likely focus on education and more restrictive measures to reduce visitor use levels and restore natural resources. Site hardening would not be appropriate in this area. Measures to reduce the number of visitors and impacts to natural resources are expected to have long-term, negligible, beneficial effects on scenic resources. More restrictive measures, such as enforcing limits on the number of visitors accessing the area, would benefit the scenic ORVs by creating an improved natural environment. These measures could also result in adverse effects by hindering visitors' ability to experience scenic resources. Since this area of the river corridor has limited accessibility and low visitor use levels, the overall effects of restrictive measures are expected to be local, long-term, and negligible.

Interim limits in Wawona would allow an increase in employee housing in the 3C zones. No new parking, overnight visitor accommodations, or camping would be added. New site design would follow the design guidelines for Yosemite National Park and could therefore result in local, long-term, negligible adverse effects on scenic resources and the scenic ORVs in the Wawona segments.

Summary of Alternative 2 Impacts. Compliance with existing park policies, including the Yosemite Valley design guidelines (NPS 2004c) would help ensure that the scenic ORVs in the Wilderness, Yosemite Valley, Gorge and Wawona are being protected and enhanced. VERP management actions would be expected to improve natural conditions within the corridor. Improvements to the natural setting and reduced crowding and congestion are expected to provide long-term, negligible, beneficial impacts on scenic resources within the corridor. Implementation of the wider river corridor boundary in El Portal would reduce development potential in this area

compared to Alternative 1. Therefore, Alternative 2 would result in a local, long-term, moderate, beneficial impact to scenic resources compared to Alternative 1.

Cumulative Impacts

Cumulative impacts from past, present, and reasonably foreseeable future actions in conjunction with Alternative 2 would be the same as Alternative 1. Overall, these cumulative actions in combination with Alternative 2 could have a net long-term, minor, adverse impact on scenic resources and the scenic ORV within the Merced River corridor.

Impairment

Alternative 2 is expected to result in long-term, minor, beneficial impacts on scenic resources and therefore would not impair the scenic ORVs for future generations.

Socioeconomics

Social Environment

Analysis

Under Alternative 2, the park would supplement existing user capacity program elements with a VERP program. In addition, park management would institute interim facility limits and bus limits until it is determined the VERP program is providing sufficient guidance on user capacity management to ensure protection of the ORVs. Under this alternative, the river corridor boundary for the El Portal segment would closely follow the location of ORVs within a quarter-mile of the river within the El Portal Administrative Site.

Under this alternative, the interim facility limits would allow for some increase in employee housing within the river corridor to accommodate existing shortages. The social environment within the river corridor could be affected by changes in housing in the developed areas and by changes in commute times to park duty stations.

Impacts in Wilderness Areas. There are limited facilities in wilderness areas, and few employees are stationed in these areas. The interim facility limits would not affect the social environment for employees in wilderness areas. User capacity would continue to be managed under the existing trailhead quotas, with the addition of VERP monitoring to track resource and visitor experience conditions. If VERP monitoring indicates that established standards are not being met under the trailhead quota system, management could reduce trailhead quotas, close certain areas, or take other actions to reduce use of wilderness areas. However, management could also address impacts by increasing enforcement of wilderness regulations. Depending on the action taken, there is a potential for the number of visitors and employees to increase or decrease from current levels. Due to the small number of employees and facilities in wilderness areas, these potential increases or decreases would likely result in a local, long-term, negligible, adverse impact on the social environment in the Wilderness segments.

Impacts in Yosemite Valley. The implementation of interim facility limits, bus limits, and a VERP program in Yosemite Valley could result in management actions that might affect the social environment (e.g., housing, community amenities, employee commute, recreation opportunities). Although the interim facility limits would allow for some increase in employee housing within the corridor, the increase is unlikely to occur in Yosemite Valley because the *General Management Plan* calls for these types of uses to be moved out of the Valley. Implementation of VERP could

result in a need to reduce employee housing in Yosemite Valley or to place restrictions on areas within the corridor used by residents for recreation (swimming, picnicking, etc.).

The effects of potential management actions in the Valley would vary by the action taken. Actions designed to reduce employee housing in the Valley could adversely benefit the social environment by reducing crowded housing conditions in the Valley. Commute times for Valley employees relocated outside the Valley would increase, however, resulting in a local, long-term, minor to moderate, adverse effect. Restrictions on the activities in various areas could reduce recreation opportunities for Valley employee residents. Because Valley employee residents have access to a broad range of recreation activities, these restrictions would likely result in a local, long-term, negligible to minor, adverse effect on recreation opportunities.

Overall, implementation of Alternative 2 could result in local, long-term, minor to moderate, benefit for employees who remain housed in the Valley and local, long-term, minor to moderate, adverse effects on employees relocated from Yosemite Valley.

Impacts in El Portal. The interim facility limits include a corridorwide limit on employee housing which allows for some additional housing within the corridor. Any expansion of employee housing in El Portal would need to be consistent with the proposed management zoning and the other elements of the Merced River Plan.

The river corridor boundary under Alternative 2 is based on a quarter-mile boundary on both sides of the river within the El Portal Administrative Site. The park administrative use (3C) zoning under Alternative 2 comprises much of the area north of the river and developed areas south of the river, allowing for development of additional administrative facilities consistent with the stringent guidelines of the Wild and Scenic Rivers Act. However, because more area is included within the corridor boundary, this alternative would likely allow for less development of new or expanded employee residential areas in El Portal compared to Alternative 1. In addition, more acreage under 2C (Day Use) and 2A (Open Space) zoning would restrict potential development in El Portal. Since the development potential under Alternative 2 is less than that under Alternative 1, the population effects on community amenities would be reduced and the effects of the boundary and zoning on the social environment in El Portal would be local, long-term, minor to moderate, and beneficial. The intensity of the impacts would depend on the level of development within the El Portal Administrative Site.

The implementation of VERP would result in management actions to maintain conditions at the established VERP standards. Management actions taken in response to the traffic indicator could include requirements for employees commuting to the Valley to use transit instead of private vehicles. Similarly, management actions taken to address natural resource impacts could include restrictions on the use of some employee recreation areas. VERP management actions that restrict recreation opportunities and employee commuting options would likely result in local, long-term, negligible to minor, adverse effects on the social environment.

Impacts in Wawona. Under Alternative 2, the interim facility limits would allow for some additional employee housing within the river corridor. This could result in an increase in employee housing in Wawona and a local, long-term, minor to moderate, adverse effect on the social environment due to pressures on local amenities and increased commutes to the Valley.

Implementation of VERP would result in management actions to maintain conditions at the established VERP standards. Management actions taken in response to the traffic indicator could include requiring employees who commute to the Valley to use transit instead of private vehicles. Similarly, management actions taken to address natural resource impacts could include restrictions on the use of some employee recreation areas. VERP management actions that restrict recreation opportunities and employee commuting options would likely result in local, long-term, negligible to minor, adverse effects on the social environment.

Summary of Alternative 2 Impacts. Implementation of interim facility limits and the VERP program, in addition to the other user capacity elements currently in place, could result in management actions that restrict activities within the river corridor, or could result in decisions to reduce employee housing in certain areas. These actions could cause local, long-term, minor to moderate, adverse effects on the social environments in El Portal, and Wawona related to the increase in employee housing, and increased commutes associated with employee relocations. The intensity of the adverse effect would depend on the level of housing relocations or reductions and the change in commute times, but would likely be minor to moderate. Effects on recreation are expected to be negligible to minor due to the broad range of recreational opportunities for residents in these areas. Economic impacts could be short- or long-term, beneficial or adverse, depending on the management action taken.

Cumulative Impacts

The discussion of the effects of past, present, and reasonably foreseeable future projects on the social environment was included under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse effect on the social environments within El Portal and Wawona due to increases in development and population and associated effects on community amenities and employee commutes. The intensity of the effects would depend upon the level to which the proposed projects are implemented.

Alternative 2 and the cumulative projects would have a local, long-term, minor to moderate, adverse cumulative effect on the social environments within the corridor due to increases in development within El Portal and Wawona and associated effects. The effects in El Portal would be expected to be lower as compared to Alternative 1, as the level of development would be lower. The impact intensity would depend upon the extent to which the cumulative projects' recommendations are implemented.

Visitor Populations

Analysis

Alternative 2 would implement interim facility limits and bus limits that would remain in place until the VERP program is providing sufficient management guidance on user capacity. Implementation of VERP would result in management actions to address conditions as needed, based upon monitoring of indicators representing desired conditions.

Implementation of interim facility limits under Alternative 2 would allow for an increase in camping in Yosemite Valley, resulting in a local, short and long-term, minor benefit to visitor populations. Implementation of the proposed bus limits would be negligible compared to bus levels expected under Alternative 1.

Implementation of the VERP program under Alternative 2 could result in management actions to address resource and visitor experience conditions that do not meet established standards. The effects of management actions would vary by the action taken. Less restrictive measures, such as visitor education or restrictions on activities in specific areas, are not expected to substantively affect visitor populations. More restrictive measures could reduce the number of day visitors through temporary access restrictions to the Valley, or temporary or permanent entrance station limits. Temporary limits would not have a long-term effect on overall park visitation. Permanent limits, implemented through entrance station restrictions or use reservations, could reduce visitor populations in the future compared to the No Action Alternative, which does not include specific limits. Park overnight visitor populations would not likely be reduced, since areas that support overnight accommodations are designated for intensive use, and management actions would be more likely to address potential effects through site improvements rather than reductions in accommodations.

The effects on visitor populations from interim facility limits and implementation of management actions under VERP would be negligible for the less restrictive measures, such as visitor education or limitations on activities in specific areas. The effects on visitor populations from temporary restrictions during peak periods would be local, short term, minor to moderate, and adverse. Permanent limits or restrictions are likely to result in local, long-term, moderate to major, adverse effects on visitor populations compared to Alternative 1. These restrictions would only be implemented in the event that VERP standards were not being met.

Summary of Alternative 2 Impacts. The interim facility limits and bus limits would result in local, short-term, minor, beneficial effects on visitor populations. Alternative 2 could result in local, short-term, minor to moderate, adverse effects on visitor populations or local, long-term, moderate to major, adverse effects on visitor populations, if restrictive management actions were implemented under VERP. The intensity of the effect would depend on the extent and duration of restrictions implemented under VERP.

Cumulative Impacts

The discussion of the effects of the cumulative projects on visitor populations was included under Alternative 1.

The cumulative projects would have a regional, long-term, negligible to minor, adverse impact on visitor populations due to the overall reduction in overnight accommodations in Yosemite Valley. This adverse effect would be offset somewhat by additional overnight accommodations being constructed outside the park.

Alternative 2 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a local, long-term, minor to major, adverse impact on visitor populations, depending on the management actions taken to ensure compliance with VERP standards.

Regional Economy

Analysis

Implementation of interim facility limits under Alternative 2 would allow for an increase in camping in Yosemite Valley, resulting in a local, short and long-term, minor benefit to the regional economy from increased visitor spending in the region. Implementation of the proposed bus limits would be negligible compared to bus levels expected under Alternative 1. Implementation of the VERP program under Alternative 2 could result in management actions to

address resource and visitor experience conditions that do not meet established standards. These measures could range from education to temporary or long-term restrictions to increased visitor facilities.

VERP management actions that affect visitor populations, such as restrictions on specific activities, on the use of specific areas, or on the levels of day use within the river corridor would have the most effect on the regional population. The effect on the regional economy would differ depending upon the management actions taken. Temporary visitor restrictions or restrictions on specific activities within the corridor would likely result in local, short-term, negligible to minor, beneficial effects if visitors temporarily displaced from the park spend more time in regional communities. Longer term restrictions on levels of visitor use would likely result in long-term, regional, minor, adverse effects if visitors are restrictions were placed on day use levels and therefore fewer visitors attempted to reach the park. The intensity of the effects would depend on the duration and extent of any potential restrictions or use level reductions. Other management actions that might be taken to address VERP standards include the expansion of visitor facilities or site hardening in areas zoned for intensive visitor use, such as zones 3A and 3B. These actions could result in regional, long-term, negligible, beneficial effects on the regional economy through increased construction spending and employment.

Summary of Alternative 2 Impacts. Implementation of interim facilities and bus limits under Alternative 2 would likely result in a local, short- and long-term, minor benefit to the regional economy. Management actions implemented under VERP could have regional, long-term, negligible to minor, benefits to regional, long-term, minor, adverse effects depending upon the measure implemented.

Cumulative Impacts

The effects on the regional economy associated with past, present, and reasonably foreseeable projects are described under Alternative 1.

The cumulative projects would have a short-term, minor, beneficial effect on the regional economy, primarily due to construction spending and employment. The cumulative projects would have a long-term, negligible to minor, beneficial effect on the regional economy due to increased regional output and employment from increased overnight accommodations in the park and in local communities.

Alternative 2 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor, adverse cumulative impact on the regional economy if VERP results in long-term reductions in visitor populations and visitor spending compared to Alternative 1. These effects would be offset to some degree by an increase in construction employment and spending, which would have a short-term, negligible to minor, beneficial effect on the regional economy.

Concessioner

Analysis

Implementation of interim facility limits under Alternative 2 would allow for an increase in camping in Yosemite Valley, resulting in a local, short-term, minor benefit to concessioner operations. Alternative 2 also implements a bus limit which would allow for some increase in visitor numbers. The effects of the bus limit would be expected to be negligible, compared to Alternative 1. Implementation of the VERP program under Alternative 2 would result in

management actions to address resource and visitor experience conditions that do not meet established standards. Measures to address these conditions could include restrictions on specific activities, on the use of specific areas, or on the levels of day use within the river corridor. Many activities available in the park are run by the concessioner, including raft rentals, horseback riding, and bicycling. In addition, concession food service sales, retail sales, and overnight accommodation receipts are directly affected by the number of visitors to the park. If management actions are taken that restrict activities offered by the concessioner or reduce visitor levels, there would be a local, long-term, adverse effect on concessioner operations. The intensity of the effect would depend on the duration and extent of the restrictions or reductions. Other management actions that might be taken to address VERP standards include the expansion of visitor facilities in areas zoned for intensive visitor use. These actions could result in local, long-term, beneficial effects on the concessioner.

Summary of Alternative 2 Impacts. Under Alternative 2, interim facility limits that allow for additional camping would result in local, short-term, minor, beneficial effects. Management actions taken to address VERP standards could result in restrictions on specific activities or more general restrictions on visitor levels, resulting in local, long-term, adverse effects on concessioner operations. The intensity of the effect would vary depending on the extent of the restrictions imposed. Management actions that increase visitor services could result in local, long-term, beneficial effects on concessioner operations.

Cumulative Impacts

The effects on concessioner operations from past, present, and reasonably foreseeable future actions were described under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse impact on the primary park concessioner associated with locating new employee housing outside of the Valley and possible restrictions on facilities and activities in wilderness areas. The adverse effect would be partially offset by increased accommodations being developed in Curry Village and at Yosemite Lodge. The impact intensity of any planning projects would depend on the extent to which the *Yosemite Valley Plan's* recommendations are implemented.

Alternative 2 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse impact on the concessioner associated with locating new employee housing outside of the Valley, possible restrictions on facilities and activities in wilderness areas, and the potential for additional restrictions on visitor levels and activities in Yosemite Valley. These effects might be offset by actions that increase visitor services within some areas of the Valley.

Park Operations and Facilities

The National Park Service is committed to the implementation of a User Capacity Management Program to protect and enhance the Merced River corridor's Outstandingly Remarkable Values. The park initiated monitoring associated with the VERP component of this program in 2004, a copy of the 2004 Annual Report is available on the park's website (www.nps.gov/yose/planning/ucmp.htm) and has secured funding for the continuation of this program through fiscal year 2008. In addition, the park has established a VERP Coordinator position and has retained a team of technical experts to assist with the development, refinement, and implementation of this program. The National Park Service is committed to implementation

of this program beyond 2008 to fully comply with Wild and Scenic River's Act requirements and to achieve the goals and objectives of protecting and enhancing the Merced River corridor's Outstandingly Remarkable Values.

Analysis

The following discussion provides an overview of the types of impacts to park operations, infrastructure, facilities, and energy consumption that could occur within each segment of the Merced River corridor under Alternative 2. Effects on park operations from the revised corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on park operations. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to park operations associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to park operations are expected to be moderate, and adverse. Redirection of visitors could involve park staff from the Visitor and Resource Protection, Facility Maintenance, Business and Revenue Management and Interpretation and Orientation divisions during traffic management activities and get coordination with local communities and media outlets.

Park Operations

Impacts in Wilderness. User capacity within the Wilderness segments is currently addressed through the existing trailhead quota system and monitoring of wilderness resource conditions. Alternative 2 would implement the interim limits with VERP program in wilderness areas, which would result in additional monitoring of indicators. (VERP indicators to be monitored in Wilderness segments are listed in table II-5.) These indicators would be monitored as an additional element of ongoing ranger patrols and other existing park operations activities such as WIMS. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in Wilderness zones.

The additional VERP monitoring, reporting of results to the public, and the potential management actions in Wilderness segments of the river corridor are expected to increase park staff workloads. However, given the seasonal nature of wilderness use and the limited number of visitors to the wilderness as a result of the trailhead quota system, this increase in workload would likely result in a long-term, minor, adverse impact to park operations. It is not expected that additional park staff or new facilities would be necessary to implement the interim limits with VERP program in the Wilderness segments.

Impacts in Yosemite Valley. Implementation of Alternative 2 in Yosemite Valley would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards were being exceeded, management actions would be implemented to maintain desired conditions in the Valley segment.

The additional VERP monitoring, reporting of results to the public, and the potential management actions in the Valley segment of the river corridor are expected to increase park staff workloads. This increase in workloads would likely result in an overall long-term, minor, adverse impact to park operations.

A bus limit in Yosemite Valley would require park operations to develop and implement a process to track buses entering the Valley, which represents a long-term, moderate, adverse impact on park operations. However, once implemented, the bus limit would represent a long-term, minor, beneficial impact to park operations by improving bus parking and traffic congestion.

Impacts in the Gorge. Implementation of Alternative 2 in the Gorge would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Gorge segment.

The Gorge segment has limited visitor and other facilities. The additional VERP monitoring, reporting of results to the public, and the potential management actions would likely increase park staff workloads. This increase in workloads would likely result in an overall long-term, minor, adverse impact to park operations.

Impacts in El Portal. Implementation of Alternative 2 in the El Portal Administrative Site would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the El Portal segment.

The additional VERP monitoring, reporting of results to the public, and the potential management actions in the El Portal Administrative Site would likely increase park staff workloads. It is expected that this increase in workloads would result in overall long-term, minor, adverse impact to park operations.

With the river boundary and management zoning in El Portal under Alternative 2, approximately 411 acres would be zoned as Park Operations and Administration (3C), 192 acres would be zoned Day Use (2C) and 250 acres would be zoned Open Space (2A). The National Park Service would be required to protect and enhance ORVs in this segment in accordance with the Wild and Scenic Rivers Act in future planning efforts. Compared to Alternative 1, this alternative would provide less flexibility for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries. Therefore, this river boundary and zoning represents a long-term, minor, adverse impact to park operations.

Impacts in Wawona. Implementation of Alternative 2 in the Wawona segments that are under park jurisdiction would include the monitoring of indicators in various management zones. The additional VERP monitoring, reporting of results to the public, and the potential management actions in the Wawona area would likely increase park staff workloads, resulting in an overall long-term, minor, adverse impact to park operations.

Park Infrastructure and Facilities

Impacts in Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona. Implementation of Alternative 2 could require limited changes to, or the addition of, new park infrastructure and facilities such as boardwalks in meadows or restrooms in high use areas. In addition, there would be an increase in park housing on a corridorwide basis. Therefore, this alternative is expected to have long-term, minor, adverse impacts to park infrastructure and facilities related to an increase in maintenance and repair activities.

As in Yosemite Valley, a bus limit in Wawona would require park operations to develop and implement a process to track and enforce the limit, resulting in a long-term, moderate, adverse impact to park operations. However, once implemented, the bus limit would represent a long-term, minor, beneficial impact to park operations by improving bus parking and traffic congestion.

In the El Portal segment, approximately 411 acres would be zoned Park Operations and Administration (3C), 192 acres would be zoned Day Use (2C) and 250 acres would be zoned Open Space (2A). The National Park Service would be required to protect and enhance ORVs located in this segment in accordance with the Wild and Scenic Rivers Act in future planning efforts. Compared to Alternative 1, this alternative would provide less flexibility for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries. Any changes to park infrastructure and facilities in Yosemite Valley, or the design and construction of new facilities in the El Portal Administrative Site, would represent a short-term, minor impact to existing park infrastructure and facilities.

Overall, the river corridor boundary and zoning under Alternative 2 would result in a long-term, moderate, beneficial impact to park infrastructure and facilities.

Energy Consumption

Impacts in Yosemite Valley, El Portal, and Wawona. Alternative 2 could increase the amount of employee housing, resulting in a long-term, minor, adverse impact on energy use in these segments compared to Alternative 1.

Impacts in Wilderness and the Gorge. Alternative 2 is not expected to increase or decrease overall energy consumption in these segments compared to Alternative 1 and thus would represent a negligible effect on park operations. Gasoline and diesel fuel consumption associated with vehicle use is expected to decline in the future due to improved fuel economy and an increased use of alternative fuels, resulting in an overall long-term, minor, beneficial impact with respect to energy consumption.

Summary of Alternative 2 Impacts. Implementation of a user capacity program that includes VERP and interim limits in the Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona segments of the river corridor is not expected to require substantial changes to or the need for new park infrastructure and facilities, with the exception of additional employee housing that could occur on a corridorwide basis. Therefore, Alternative 2 would have a long-term, minor, adverse impact on park operations and park infrastructure and facilities.

In El Portal, the flexibility of the river boundary and zoning would result in an overall long-term, minor, adverse impact to park operations and park infrastructure and facilities.

Compared to Alternative 1, Alternative 2 would not increase the amount of energy consumed in the river corridor segments associated with increased employee housing within the river corridor, resulting in an overall long-term, minor, adverse impact with respect to energy consumption. However, gasoline and diesel fuel consumption associated with vehicle use is expected to decline in the future because of improved fuel economy and an increased use of alternative fuels.

Cumulative Impacts

The cumulative effects to park operations from past, present, and foreseeable future actions would be the same as those described for Alternative 1. Overall, these cumulative actions in combination with Alternative 2 could have a net long-term, minor, beneficial effect on park operations in the Merced River corridor.

Unavoidable Adverse Impacts

The following discussion identifies unavoidable adverse impacts to resources associated with implementation of Alternative 2, which implements a user capacity program within the river corridor and also includes interim facility limits as described in Chapter III. For the purposes of this document, these impacts have been identified as being unavoidable, moderate to major, and adverse.

No impacts associated with the implementation of Alternative 2 have been identified as being unavoidable, moderate to major, and adverse.

Irreversible and Irretrievable Commitments of Resources

This section identifies any resources that would be lost either temporarily or permanently as a result of Alternative 2. Alternative 2 would implement a VERP program with interim facility limits, and a revised boundary for the El Portal segment of the river based on the location of ORVs within a quarter-mile of the river (as described in Chapter III).

Relocating existing facilities and/or the development of new facilities in El Portal would result in the expenditure of energy to relocate or develop the facility. In addition, relocating existing facilities and/or construction of new facilities would involve an irreversible commitment of construction-related materials, such as concrete, asphalt, wood, and metal.

Similar to Alternative 1, energy consumption in the park will continue into the future resulting in an irreversible and irretrievable commitment of energy sources under Alternative 2. However, overall energy consumption is expected to decrease with time as the park converts to more efficient types of equipment, and fleet vehicle turnover occurs resulting in the use of more technically advanced and energy-efficient vehicles.

Relationship of Short-Term Uses of the Environment and Long-Term Productivity

The river corridor and management zoning associated with Alternative 2 for El Portal would allow for development of park administrative facilities within 219 acres of the 649 acres within the corridor (primarily north of the river). Potential development would occur in a manner which protects the ORVs within this management zone, however, these actions could temporarily adversely effect resources during construction. However, once completed, the relocated and/or newly constructed facilities would have a long-term benefit to park operations.

Responsiveness of Alternative 2 to the Ninth Circuit Court of Appeals' Direction on the Merced River Plan

The Ninth Circuit Court of Appeals directed the National Park Service to revise the Merced River Plan to address user capacity and to draw the boundaries in the El Portal segment in a manner

that protects its ORVs. In addition, the District Court for the Eastern District of California directed the National Park Service to address how the Merced River Plan would amend the 1980 *General Management Plan*.

User Capacity

In addressing user capacity, the Court specifically directed the National Park Service to "adopt specific limits on user capacity consistent with both the Wild and Scenic Rivers Act and the instruction of the Secretarial Guidelines that such limits describe an actual level of visitor use that will not adversely impact the Merced's ORVs."

Alternative 2 includes each of the specific measurable limits on types and levels of use that are included within Alternative 1. (The analysis of those limits is incorporated herein.) In addition, Alternative 2 adopts a systematic VERP program and an array of interim limits on types and levels of visitor service and employee facilities within the river corridor. The interim facility limits established in Alternative 2 would remain in place for approximately 5 years, while the VERP program is being refined. As described previously in the VERP discussion, while some aspects of the VERP program may take several cycles of field testing, some aspects could be operational within a short time. The interim limits would not be eliminated at the end of 5 years, unless park managers were confident that the VERP program was providing sound guidance on appropriate types and levels of visitor use and adequate protection of the Outstandingly Remarkable Values within the river corridor. If changes proposed at this time would result in substantially different environmental consequences than were identified in this document, an appropriate level of NEPA compliance would be completed.

The specific interim facility limits under Alternative 2 would address both visitors and employees. Employee housing would be limited to housing for 1,969 employees within the corridor. (Employees are managed at the corridor level to allow the park flexibility in reassigning employees among various duty stations.) Day visitor use of the Valley would be limited by managing to existing parking levels in the east and west Valley (2,197 spaces total) and by limiting buses to 92 per day. (This limit does not apply to in-Valley shuttle buses which serve to reduce traffic congestion and do not add visitors to the Valley.) The adoption of the interim parking limit for Yosemite Valley would likely result in the need to implement restricted access policies several times each year during the peak season to maintain visitation within this limit. Under these policies, which are described under the No Action Alternative in Chapter III, park management may temporarily restrict vehicles from entering Yosemite Valley when traffic congestion reaches predetermined levels. Traffic is allowed to re-enter the Valley when congestion has decreased. Overnight lodging units in the Valley would be limited to their current level (1,262 units) and camping would be allowed to increase by 163 sites to 638. This level is well below the number of campsites that existed in the Valley prior to the January 1997 flood. Each of these limits is specific and measurable and will allow the National Park Service to regulate the number of people allowed in the Yosemite Valley segment.

Interim limits adopted in this Act will also regulate the numbers of visitors and employees in the other river segments. Visitor use of the Gorge and El Portal would also be limited during the interim period by managing these areas to existing parking levels (244 spaces and 360 spaces, respectively). Similarly, the Wawona area would be managed in the interim period to existing parking levels (213), and buses would be limited to 28 per day. Overnight lodging in Wawona would be limited to the existing level of 104 units, and camping would be limited to the existing

level of 99 sites. No new campgrounds or lodging units would be allowed on park land in El Portal during the interim period. For Wilderness segments, no new campgrounds or trails would be allowed during this interim period, and use would continue to be managed by the Wilderness Trailhead Quota System and Wilderness Impact Management System.

Under this alternative, the National Park Service would also implement a VERP program. Under the VERP program, the National Park Service has adopted a host of indicators (measured variables) and standards (measured values) that reflect the qualitative conditions for the management zones in quantitative form. The standards have been set at levels designed to protect and enhance ORVs (see table II-5). The standards are scientifically measurable limits, and the standards would be measured through a monitoring program designed for each specific indicator. The standards provide clear, documented triggers for management action. If a standard is being met, management action is not required. If conditions were declining (but not yet fallen below a set standard), management action could be taken to improve the condition and forestall continued decline. If monitoring indicates that conditions do not meet established standards, management action must be taken. Table II-3 presents a list of the types of management actions that can be taken to address conditions documented through the VERP program. When the VERP program is providing adequate data to guide the protection and enhancement of ORVs, park management would eliminate the interim limits described above. Prior to lifting the interim limits, the park would present analysis to the public of how the VERP program is providing the required guidance to address user capacity.

Alternative 2 provides interim limits on use of the entire river corridor until the VERP program starts providing adequate data to address user capacity. After the interim period is concluded, the VERP program included in this alternative, along with the existing user capacity measures from the No Action Alternative, would provide an adequate array of specific, measurable limits on types and levels of use to ensure that the river's ORVs are being protected and enhanced. (The manner in which these user capacity program elements will enable ORVs to be protected is described in the environmental consequences discussion in this chapter.) As a result, Alternative 2 complies with the Court direction requiring specific, measurable limits on user capacity that will protect the river's ORVs.

El Portal Boundary

The Court directed that the National Park Service "redetermine the river area boundaries at El Portal" and that these boundaries "must be drawn so as to protect and enhance the ORVs causing that area to be included within the Wild and Scenic River System." In response to this direction from the court, the National Park Service gathered data on ORVs in El Portal, and used this data to inform the width of the boundaries and the zoning applied within those boundaries.

In El Portal, Alternative 2 proposes a quarter-mile river corridor boundary on each side of the river for the El Portal segment. The proposed zoning under Alternative 2 would allow development of park administrative and visitor use facilities within the corridor (in selected areas primarily north of the river), if it can be completed in a manner that protects the ORVs. Undeveloped areas south of the Merced River and select areas of sensitive resources north of the river are zoned 2C (Day Use) and 2A (Open Space). This places substantial limits on the types of development that could occur there. Park administrative uses such as employee housing and park offices could not be developed in 2C or 2A areas.

The additional data gathered on the location of ORVs together with the more restrictive zoning across a larger portion of the El Portal Administrative Site provide for the protection of ORVs. Further, all facility development proposed within the El Portal Administrative Site would undergo environmental compliance review, which would require the proposed development to be consistent with all of the elements of the Merced River Plan, including the protection and enhancement of ORVs.

The proposed boundary under Alternative 2 meets the Court direction to redraw the boundary so as to protect the ORVs for this segment of the river.

Amendments to the 1980 *General Management Plan*

The Wild and Scenic Rivers Act requires the managing agencies to prepare comprehensive management plans for the river and its immediate environment. The Merced River Plan, as revised by this document, provides direction on these issues for the 81 miles of the Merced Wild and Scenic River under the jurisdiction of the National Park Service.

Congress further authorized the National Park Service to prepare its management plan for the river by making appropriate revisions to the park's 1980 *General Management Plan* (16 USC 1274[a][62]). The Wild and Scenic Rivers Act generally provides that river management plans "shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands" (16 USC 1274).

While it is not the policy of the National Park Service retroactively to revise existing plans, Section 1274(a)(62) of the Wild and Scenic Rivers Act requires that the *General Management Plan* be revised to meet the requirements of section 1274(b). Accordingly, the Merced River Plan adopted in November 2000 resulted in the following amendments to the *General Management Plan*. The Merced River Plan's management zoning, River Protection Overlay, river corridor boundaries (with the exception of the El Portal segment) and classifications, and the ORVs revise the *General Management Plan* by establishing more detailed land-use prescriptions that must be applied in future site-specific planning. The Merced River Plan's Section 7 determination process is a tool that augments the goals of the *General Management Plan*. If selected, this alternative further revises the *General Management Plan* by adopting a new boundary and zoning plan for the El Portal area and by adopting a VERP monitoring and action plan. No development or use of park lands in the areas within the river corridor shall be undertaken that is inconsistent with the Wild and Scenic Rivers Act designation of the Merced River, or that is inconsistent with the Merced River Plan, as revised by the Revised Merced River Plan/SEIS.

General Management Plan Goals

The *General Management Plan* establishes five broad goals for managing Yosemite National Park (NPS 1980a, pp. 1-4). Although the *General Management Plan* is over 20 years old, its goals are still valid today and apply to the management of the Merced River corridor under the Merced River Plan. The Merced River Plan works in concert with the goals set forth in the *General Management Plan*, and outlines an additional set of specific goals for management of the Merced Wild and Scenic River (NPS 2000c, pp. 23-24). The Merced River Plan's five goals were developed to further the policy established by the Wild and Scenic Rivers Act, namely to preserve designated rivers in their free-flowing condition, and protect and enhance the river's ORVs. The five defining goals of the *General Management Plan* and the five goals of the Merced River Plan are intertwined, and no one goal can be emphasized to the complete exclusion of the others.

General Management Plan Management Objectives

The *General Management Plan* sets forth a number of Management Objectives that guide resource management, visitor use, and park operations (NPS 1980a, pp. 5-10). The elements of the Merced River Plan, including the revisions made by this alternative, provide an added level of detailed guidance to park managers on how to achieve management objectives for the park. Those elements are boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and VERP. For example, projects within the river corridor must protect and enhance ORVs and be consistent with the other elements of the Merced River Plan. Projects adjacent to the river corridor must protect ORVs, and depending on location, may need to undergo a Section 7 review if they affect the bed or banks of the river.

General Management Plan Land Management Zoning

The *General Management Plan* (NPS 1980a, pp. 10-13) specifies several land management zones, including a Development Zone. The management zones described in the Merced River Plan and the management zones proposed for the El Portal segment for Alternative 2 as illustrated in figure III-2 replace the Management Zoning Plan of the *General Management Plan* for those areas within the Merced Wild and Scenic River corridor boundaries. Zoning of areas outside the river corridor boundary remains unchanged, however development and uses in areas adjacent to the river corridor must be protective of ORVs, as provided for in the Merced River Plan.

General Management Plan Visitor Use

The Yosemite National Park *General Management Plan* was adopted in 1980. In that era, visitor carrying capacity for national park plans was based on the capacity of facilities and infrastructure. Changes to existing facilities and infrastructure were recommended to fulfill and support management objectives. In this method, facility capacity defined the visitor carrying capacity.

In the Yosemite 1980 *General Management Plan*, the total visitor capacity "goals" it established were well below the actual level of facilities. That is, the existing facility capacities were greater than the capacities deemed optimum by the plan. Thus the *General Management Plan* called, not only for a reduction in facility capacity, but relocation of many existing facilities out of Yosemite Valley. These goals to remove and relocate facilities have guided all park planning efforts subsequent to the *General Management Plan*, including this plan. (For a comparison of facility capacities, see tables III-7 and III-9).

In the 1990s, national scientific and scholarly research, and National Park Service policy discussions, resulted in the adoption a new methodology for determining visitor carrying capacity. This methodology—the VERP framework—is described in *Management Polices 2001* and in new Park Planning Program Standards signed in August 2004.

While the land use management zones and general management direction of the 1980 *General Management Plan* still largely meet the 2004 Park Planning Program Standards, the 1980 approach to visitor carrying capacities does not. In order to meet the new policy standards, Yosemite National Park will amend that element of the *General Management Plan* by translating the former carrying capacity approach to the more responsive VERP process through each new planning effort undertaken. The visitor carrying capacity approach proposed herein for the Revised Merced River Plan/SEIS would therefore amend the subject corridor portion of the *General Management Plan* with regard to carrying capacity.

In the future, overall visitation could increase or decrease under Alternative 2 as compared with *General Management Plan* levels. The overall level of park visitation, including the types and levels of use, would be informed by the results of monitoring as a component of the VERP program, which is designed to ensure visitor levels do not degrade Outstandingly Remarkable Values.

The addition of the interim limits on facilities and specific activities and the implementation of a VERP program with detailed standards and indicators will provide park managers with on-the-ground information on the condition of Outstandingly Remarkable Values. Thus, managers will make more informed decisions to further protect and enhance the Outstandingly Remarkable Values and natural river processes. The interim facility limits established in Alternative 2 would remain in place for approximately 5 years, while the VERP program is being refined. As described previously in the VERP discussion, while some aspects of the VERP program may take several cycles of field testing, some aspects could be operational within a short time. The interim limits would not be eliminated at the end of 5 years, unless park managers were confident that the VERP program was providing sound guidance on appropriate types and levels of visitor use and adequate protection of the Outstandingly Remarkable Values within the river corridor. If changes proposed at this time would result in substantially different environmental consequences than were identified in this document, an appropriate level of NEPA compliance would be completed. Since VERP serves as a type of report card on the condition of various Outstandingly Remarkable Values, the National Park Service has committed to providing the public with regular updates on the status of the VERP user capacity component.

In the long-term, the use of existing user capacity methods and the VERP program will allow the park to protect and enhance the Outstandingly Remarkable Values of the Merced River.

General Management Plan Developed Area Plans

The *General Management Plan* (NPS 1980a, pp. 31-59) contains Developed Area Plans for areas within and adjacent to the river corridor. Development Concepts for areas within the river corridor must comply with the management elements of the Merced River Plan, (boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and the park's user capacity management program). Therefore, the development concepts presented in the *General Management Plan* have been amended by the Merced River Plan for areas within the river corridor. In the case of El Portal, the new boundary and zoning proposal for this alternative would amend the *General Management Plan*'s development concept for El Portal. To the extent that any Development Concept is less restrictive than the Merced River Plan, as revised by this plan, the Merced River Plan controls. Actions adjacent to the river corridor but outside of the river boundary must also protect ORVs.

Table V-3 provides a summary of how this alternative affects the ORVs for each segment of the Merced River corridor.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
	MAIN STEM MERCED RIVER SEGMENTS	
1. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 2 would not affect the amount of the watershed which is within designated Wilderness. Alternative 2 would continue use of the Wilderness trailhead quota system, along with implementation of VERP, to manage visitor use in designated Wilderness. These measures would protect the natural, cultural and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment includes views from the river and its banks of the glaciated river canyon, exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of the canyon, the riverbed, cascades, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment traverses a U-shaped, glacially carved canyon separated by cascades and soda springs below Washburn Lake.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 2.
	Recreation – This segment provides outstanding opportunities for solitude along the river, with primitive and unconfined recreation. There is a spectrum of levels of recreational use. River-related recreational opportunities include day hiking, backpacking, horseback riding and packing, camping, and enjoyment of natural river sounds. Untrailed tributaries provide enhanced opportunities for solitude.	*Recreation* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system along with VERP. Under Alternative 2, VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. A spectrum of river-related recreational opportunities would continue to be available to wilderness visitors.
	Biological – This segment includes a nearly full range of intact Sierran riverine environments; high-quality riparian, meadow, and aquatic habitats (such as the meadow at Washburn Lake), and special-status species such as mountain yellow-legged frog.	*Biological* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect the biological resources from visitor use-related impacts.
	Cultural – This segment includes portions of a prehistoric trans-Sierra route in use for thousands of years and many prehistoric sites. There are many historic resources such as homestead sites, trails, river crossings, High Sierra Camp sites, and structures.	*Cultural* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.
	Hydrologic Processes – The segment is characterized by a free-flowing river and excellent water quality. The river gradient drops from 13,000 to 6,000 feet in elevation. There are examples of natural conditions, including glacial remnants, a logjam in Little Yosemite Valley that is hundreds of years old, and numerous cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character, its gradient, glacial remnants or cascades. Water quality in wilderness areas would be protected under Alternative 2 through existing limits on visitor use in wilderness and through implementation of VERP with monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Main Stem-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wilderness segment by managing development or uses in wilderness areas that would adversely affect hydrologic processes.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
2. Yosemite Valley	*Scenic* – This segment provides magnificent views from the river and its banks of waterfalls (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, Bridalveil, and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rock, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil). There is a scenic interface of river, rock, meadow, and forest throughout the segment.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of waterfalls and rock cliffs from the river and its banks. Implementation of Alternative 2 would protect and enhance the scenic views of meadows through management of visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts in meadows.
	Geologic Processes/Conditions – This segment contains a classic, glaciated, U-shaped valley, providing important examples of a mature meandering river; hanging valleys such as Yosemite and Bridalveil Creeks; and evidence of glaciation (e.g., moraines below El Capitan and Bridalveil Meadows).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 2.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking. Yosemite Valley is one of the premier outdoor recreation areas in the world.	*Recreation* – Implementation of Alternative 2 would protect and enhance recreation in the Valley through management of visitor use in the Valley and management actions taken under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of river-related recreational opportunities.
	Biological – Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for a diversity of river-related species, including special-status species, neotropical migrant songbirds, and numerous bat species.	*Biological* – Implementation of Alternative 2 would protect and enhance low-elevation meadows, wetlands, riparian areas, and other riverine areas through management of visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains evidence of thousands of years of human occupation reflected in a large number of archeological sites and continuing traditional use today. Nationally significant historic resources are found here, such as designed landscapes and developed areas, historic buildings, and circulation systems (trails, roads, and bridges) that provide visitor access to the sublime views of natural features that are culturally valuable.	*Cultural* – Implementation of Alternative 2 would protect and enhance cultural resources through management of visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a meandering river, world-renowned waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes.	*Hydrologic Processes* – Visitor use would not affect the Valley's spectacular waterfalls or the river's meandering character, flood regime, or fluvial processes. Implementation of Alternative 2 would protect and enhance wetlands through management of visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts on wetland areas.
Yosemite Valley Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Yosemite Valley by managing development or uses that would adversely affect the ORVs of the segment.
3. Gorge[a]	*Scenic* – This segment provides views from the river and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of the Cascades, rapids, waterfalls, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment is characterized by a classic V-shaped river gorge with a continuous steep gradient.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 2.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
	Recreation – This segment provides a spectrum of river-related recreational opportunities, such as picnicking, fishing, photography, and sightseeing.	*Recreation* – Implementation of Alternative 2 would protect and enhance recreation in the Gorge by managing visitor use levels and implementing management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas and associated special-status species that are largely intact and almost entirely undisturbed by humans.	*Biological* – Implementation of Alternative 2 would protect and enhance the diverse riparian areas and their associated special-status species through management of visitor use in the Gorge and implementation of specific management actions taken under VERP, as needed, to address visitor-related impacts on riparian areas and related species.
	Cultural – This segment contains cultural resources, including prehistoric sites and historic sites and structures such as those relating to historic engineering projects.	*Cultural* – Implementation of Alternative 2 would protect and enhance cultural resources through management of visitor use in the Gorge and implementation of management actions under VERP, as needed, to address visitor-related impacts.
	Hydrologic Processes – This segment is characterized by exceptionally steep gradients (2,000-foot elevation drop in approximately 6 miles).	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 2.
Gorge Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Gorge segment by managing development or uses that would adversely affect the ORVs of the segment.
4. El Portal	*Geologic Processes/Conditions* – This segment contains a transition from igneous to metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, or to the proposed corridor boundary and management zoning for El Portal, and would not be affected by Alternative 2.
	Recreation – This segment provides a range of river-related recreational opportunities, in particular whitewater rafting and kayaking (class III to V) and fishing.	*Recreation* – Implementation of Alternative 2 would protect and enhance recreation in El Portal through management of visitor use in El Portal and implementation of specific management actions, as needed, to address visitor experience conditions. The proposed El Portal boundary and the management zoning proposed may benefit access to the spectrum of recreational opportunities in El Portal.
	Biological – This segment contains riverine habitats such as riparian woodlands and associated federal and state special-status species, including Tompkin's sedge and Valley elderberry longhorn beetle and its critical habitat (elderberry shrub). Expanses of north-facing habitat allow unlimited access to the riparian zone for wildlife species.	*Biological* – Implementation of Alternative 2 would protect and enhance these biological resources through management of visitor use in El Portal, implementation of specific management actions taken under VERP, as needed, to address visitor-related impacts, and implementation of the proposed boundary and zoning.
	Cultural – This segment contains some of the oldest archeological sites in the Yosemite area, as well as many historic Indian villages and traditional gathering places. River-related historic resources include structures related to early tourism and industrial development.	*Cultural* – Implementation of Alternative 2 would protect and enhance cultural resources through implementation of a quarter-mile boundary. In addition, management of visitor use in El Portal and implementation of management actions under VERP, as needed, to address visitor-related impacts, would protect and enhance cultural resources.
	Hydrologic Processes – This segment is characterized by seasonally continuous rapids.	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 2.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
El Portal Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the El Portal segment by managing development or uses that would adversely affect the ORVs of the segment.
	SOUTH FORK MERCED RIVER SEGMENTS	
5. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 2 would not affect the amount of the watershed within designated Wilderness. Alternative 2 would continue use of the trailhead quota system, along with implementation of VERP, to manage visitor use in designated Wilderness. This would protect the natural, cultural, and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment provides views from the river and its banks of unique river features, including large pothole pools within slickrock cascades, old growth forest, and meadows.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of pothole pools within slickrock cascades or old growth forest. Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Geologic Processes/Conditions – This segment is characterized by glaciated valleys in the high country and V-shaped canyons above Wawona. Moraine meadows and soda springs above Gravelly Ford are also unique, river-related geologic features.	*Geologic Processes/Conditions* – Most of these geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 2. Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation. This segment of the river is predominantly without trails, with the exception of four bridgeless trail crossings in the upper reaches of the segment.	*Recreation* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system along with VERP. Under Alternative 2, VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. Visitors to this segment would continue to have access to outstanding river-related recreation opportunities.
	Biological – This segment includes a nearly full range of riverine environments typical of the Sierra Nevada. Examples of river-related federal and state special-status species include Wawona riffle beetle and mountain yellow-legged frog.	*Biological* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect the riverine communities and special-status species from visitor use-related impacts.
	Cultural – This segment includes river-related prehistoric sites and resources and reflects historic stock use and cavalry activities.	*Cultural* – Under Alternative 2, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
	Hydrologic Processes – This segment is characterized by a free-flowing river and excellent water quality.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character. Water quality in wilderness areas would be protected under Alternative 2 through existing limits on visitor use in wilderness and through implementation of VERP with monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
South Fork-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the South Fork Wilderness segment by managing development or uses that would adversely affect the ORVs of the segment.
6. Impoundment[b]	*Scenic* – This segment provides views from the river and its banks of the river and Wawona Dome.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of the river or Wawona Dome.
	Hydrologic Processes – This segment has excellent water quality.	*Hydrologic Processes* – Water quality would be protected under Alternative 2 through implementation of VERP with monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Impoundment Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Impoundment segment by managing development or uses that would adversely affect the segment's ORVs.
7. Wawona	*Scenic* – This segment provides views from the river and its banks of Wawona Dome.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of the river or Wawona Dome.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and photography to hiking.	*Recreation* – Implementation of Alternative 2 would protect and enhance recreation in Wawona through management of visitor use levels through existing programs and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors to Wawona would still have access to a spectrum of recreational opportunities.
	Biological – This segment contains a diversity of river-related species, wetlands, and riparian habitats. There are federal and state special-status species in this segment, including the Wawona riffle beetle.	*Biological* – Implementation of Alternative 2 would protect and enhance wetlands, riparian habitats, and special-status species through management of visitor use levels and management actions taken under VERP, as needed, to address visitor-related impacts to sensitive vegetation or species.
	Cultural – This segment contains evidence of thousands of years of human occupation, including numerous prehistoric and historic Indian villages, historic sites, structures, and landscape features related to tourism, early Army and National Park Service administration, and homesteading.	*Cultural* – Implementation of Alternative 2 would protect and enhance cultural resources through management of visitor use and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.

Table V-3
Effect of Alternative 2 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 2 on the ORVs
Wawona Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wawona segment by managing development or uses that would adversely affect the segment's ORVs.
8. Below Wawona	*Scenic* – This segment provides views from the river and its banks of continual whitewater cascades in the deep and narrow river canyon in a untrailed, undisturbed environment.	*Scenic* – Implementation of Alternative 2 would not affect the scenic views of whitewater cascades or untrailed, undisturbed environment.
	Geologic Processes/Conditions – This segment contains a transition from Paleozoic Era igneous to Cretaceous Period metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 2.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities include hiking, fishing, and whitewater kayaking.	*Recreation* – Implementation of Alternative 2 would protect and enhance recreation through management of visitor use levels and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors will continue to have access to outstanding river-related recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas that are intact and largely undisturbed by humans. River-related federal and state special-status species in this segment include the Wawona riffle beetle.	*Biological* – Implementation of Alternative 2 would protect riparian areas and special-status species through management of visitor use and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains archeological sites and historic resources such as trail segments representing early cavalry activity.	*Cultural* – Implementation of Alternative 2 would protect and enhance cultural resources through management of visitor use and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a free-flowing river with continual whitewater cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character and whitewater cascades.
Below Wawona-Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Below Wawona segment by managing development or uses that would adversely affect the segment's ORVs.

NOTES:
a The Cascades Diversion Dam was removed in 2004. The segment that was formerly designated as 3a has been combined with the segment formally designated 3b and this entire area forms segment 3.
b The Impoundment would become part of segment 7, Wawona, if an alternative water source for the area was secured and the impoundment was removed.

Alternative 3: VERP program with Segment Limits

The environmental consequences analysis for Alternative 3 addresses elements of the user capacity program for the entire Merced River corridor and the river corridor boundary as well as associated management zone prescriptions for the El Portal segment specific to Alternative 3. It does not provide an analysis of impacts that could be associated with elements of the park's existing user capacity programs as identified in Alternative 1. Similarly, this analysis does not address other existing management elements for the Merced River corridor that were previously described and analyzed in the Merced River Plan/FEIS.

Natural Resources

Geology, Geohazards, and Soils

Analysis

The following discussion provides an overview of the types of impacts that could occur under Alternative 3 with respect to geohazards (rockfall and seismic hazards), and soils.

Rockfall Hazards. Under Alternative 3, rockfall hazards would remain essentially the same as described for Alternative 1, with the possible exception that (1) established limits could result in fewer visitors being exposed to rockfall hazards in certain areas of the river corridor, and (2) management actions taken in response to indicators unrelated to rockfall hazards under the VERP program with daily segment limits could reduce the number of users exposed to rockfall hazard in some areas. The effects of either of these potential exceptions on rockfall hazard impacts would likely be negligible under Alternative 3. Current park management policies and the *Yosemite Valley Geologic Hazard Guidelines*, which require most new facilities and uses to be placed outside the talus zone and the rockfall shadow zone, would continue to be implemented, and, in the near term, visitation levels would be similar to existing levels. In addition to current management programs and policies, the daily segment limits and VERP program that would be implemented under Alternative 3 establish user capacity limits and provide for management actions that would be triggered to achieve or maintain established standards. Some of these management actions would have the effect of limiting users in some areas. As a result, in the long term, implementation of the VERP program with daily segment limits is expected to reduce future visitation levels under Alternative 3 compared with future, long-term visitation levels under Alternative 1. This would, in turn, result in somewhat fewer users exposed to rockfall hazards, and therefore would be a minor, beneficial effect of this alternative.

Seismic Hazards. Potential seismic hazards in the Merced River corridor would be the same under Alternative 3 as described for Alternative 1.

As described under Alternative 1, current park management policies regarding geohazards would continue to be implemented, and, in the near term, visitation levels under Alternative 3 would be similar to those under Alternative 1. The VERP program and daily segment limits under Alternative 3, in addition to current management programs and policies, provide for specific user limits and management actions that would be triggered to achieve or maintain established standards. The combination of daily segment limits and VERP management actions would have the effect of limiting users in some areas. As a result, in the long term, Alternative 3 is expected to slightly lower visitation levels that could reasonably be expected to occur compared to Alternative

1.This would, in turn, result in fewer users being exposed to earthquake ground shaking hazards, and therefore would be a minor, beneficial effect.

Impacts to Soils. Under Alternative 3, as under Alternatives 1 and 2, soils along most of the river corridor would remain relatively undisturbed and uncompacted. Under Alternative 3, the management would implement VERP indicators and standards as described under Alternative 2. Although only one of these indicators is explicitly concerned with soil erosion, the indicators related to intensity of visitor use and effects of visitor use on vegetation also reflect impacts on soils, and the standard associated with each indicator would provide a management tool that could protect soils from excess compaction and erosion. Similarly, s would help prevent erosion or compaction impacts that result from concentrated visitor use in some areas. Until VERP is fully operational, it might not be apparent what effect daily segment limits have on the frequency with which management actions would be triggered by VERP monitoring.

Management actions associated with the redirection of visitors from compacted soils in sensitive areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Under Alternative 3, visitor use could continue to affect soils by contributing to erosion, soil compaction, and removal of surface soils. Excessive surface water runoff or loss of protective vegetation cover could cause erosion. Compaction of native soils could occur through concentrated visitor use in localized areas or excessive vehicular traffic in unpaved areas. In the long term, compared to Alternative 1, implementation of a VERP program combined with daily segment limits as provided under Alternative 3 would reduce adverse impacts to Yosemite soils.

The boundary for the El Portal segment of the Merced River corridor in Alternative 3 would be a quarter-mile wide. The zoning for this alternative would provide for primarily high-intensity use north of the river, which is largely zoned for Park Operations and Administration (3C). Except for the existing Murchison structures and Trailer Village/Abbieville, which are zoned 3C, the area south of the river is zoned for Discovery (2B). The zoning provides the potential for much of the land north of the river to be used for administrative purposes. As with Alternative 1, future construction of administration facilities as allowed under this boundary and zoning could cause erosion of exposed soil. Temporary construction-related erosion could occur during periods of rain, while soil is exposed, and prior to the site restoration and cleanup phases of the future projects. Erosion and soil loss typically occur immediately after initial site grading or following construction of a fill slope with exposed soil. As described under Alternative 1, impacts associated with construction-period soil erosion and sedimentation would be mitigated through preparation and implementation of a stormwater pollution prevention plan. Therefore, erosion and soil loss associated with grading and construction activities would result in a local, short-term, minor, adverse impact. Long-term soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Therefore, relative to Alternative 1, Alternative 3 would have similar effects on soil erosion from future construction activities at the El Portal Administrative Site. Implementation of the VERP program and daily segment limits, in conjunction with the proposed El Portal boundary and zoning, would ensure that management

actions would be taken to achieve or maintain established standards with respect to trails, riverbank erosion, vegetation, and other indicators. Thus, Alternative 3 would result in a local, long-term, minor, beneficial impact on soil resources.

Summary of Alternative 3 Impacts. In the short term, impacts related to rockfall and seismic hazards would be unchanged from Alternative 1 because the number of users exposed to these hazards would be approximately the same. In the long term, fewer users would be exposed to rockfall hazards under Alternative 3 than under Alternative 1 due to somewhat lower visitation levels in the future resulting from management actions under the VERP program and daily segment limits. For the same reason, in the long term, slightly fewer users would be exposed to earthquakes and associated seismic hazards under Alternative 3; therefore, compared to Alternative 1, Alternative 3 would have a minor beneficial impact on public safety associated with seismic hazards. Compared to Alternative 1, Alternative 3 would have similar effects on soil erosion from future construction at the El Portal Administrative Site. However, efforts to protect biological and recreation ORVs through implementation of the VERP program, including management actions to achieve the identified standards and application of specified user limits along the different segments of the river, would have a long-term, minor, beneficial impact on soil resources. The implementation of day-use limits in Little Yosemite Valley would also limit the number of people able to climb Half Dome. This restriction would provide a localized, long-term, negligible to minor, beneficial impact to the soils in the Little Yosemite Valley and Half Dome areas compared to Alternative 1. The combined adverse and beneficial impacts to soil resources under Alternative 3, compared with Alternative 1, would be long term, minor, and beneficial.

Alternative 3 will continue to enhance and protect the identified geologic processes/conditions ORVs within the individual river segments.

Cumulative Impacts

Cumulative impacts to geologic resources, geohazards, and soil resources under Alternative 3 would be the same as described for Alternative 1.

Although rockfalls and earthquakes are unpredictable and unavoidable by nature, rockfall and earthquake hazards under Alternative 3 and the cumulative projects would result in a local, long-term, minor, beneficial impact to public safety in Yosemite National Park and the El Portal Administrative Site. This beneficial impact would be due to the smaller increase in long-term visitation levels under Alternative 3 compared to Alternative 1 and to efforts by the National Park Service to relocate critical facilities outside the talus slope and rockfall shadow zone, to avoid construction of new facilities in these hazard areas, and to conduct appropriate geotechnical studies prior to construction of facilities on soils susceptible to seismic ground shaking. The projects, in combination with Alternative 3, would result in a net regional, long-term, minor, beneficial impact on soil resources.

Impairment

Compared to Alternative 1, Alternative 3 would have a local, long-term, minor, beneficial impact on geologic resources and soils. Therefore, Alternative 3 would not impair geologic resources for future generations.

Hydrology, Floodplains, and Water Quality

Analysis

The following discussion provides an overview of the types of impacts to hydrology, floodplains, and water quality that could occur within each segment of the Merced River corridor under Alternative 3.

Management actions associated with the redirection of visitors from floodplains and adjacent areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. The hydrologic processes ORV in the Wilderness segments of the river corridor is characterized the river's free-flowing condition and excellent water quality. The ORV description also notes the river gradient, the natural conditions (e.g., glacial remnants, a logjam in Little Yosemite Valley), and numerous cascades. Of the qualities described in the ORV, most are relatively insensitive to user-related impacts, with the exception of water quality. Water quality in Wilderness segments is considered to be excellent.

User capacity within wilderness areas of Yosemite National Park (including those portions within the river corridor in both the Main Stem Wilderness and South Fork Wilderness segments) is addressed through the trailhead quota system and monitoring of wilderness resource conditions. Similar to Alternative 2, implementation of the VERP program with daily segment limits for the Wilderness segments would result in additional monitoring of indicators within wilderness areas. VERP indicators to be monitored in Wilderness management zones are listed in table II-5.

The removal of up to 3,000 gallons of water per day from the Merced River to support functions at the Merced Lake High Sierra Camp during the summer (when this camp is open to the public) represents a negligible impact to the river's hydrologic processes at or downstream of the point of withdrawal. This negligible impact is due to the small daily withdrawal volumes when compared to overall river flows in this area.

The impacts of the management actions implemented as a result of VERP would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on water resources. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, and water pollution. Educational efforts would be expected to result in local, short- and long-term, negligible to minor, beneficial impacts on hydrology and water quality. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects due to reduced trampling of vegetation by people and stock, reduced soil compaction, and reduced waste loads. These actions would be expected to result in local, long-term, minor to moderate, beneficial impacts on hydrology and water quality. Finally, measures taken to close and/or restore areas would be expected to result in local, long-term, minor to moderate, beneficial effects on water resources associated with restoration of vegetative cover, reduced soil compaction, and reduced erosion.

In wilderness areas, few structures are permitted to be constructed, and Alternative 3 would not affect the floodplain or its ability to accommodate flood flow.

VERP monitoring in conjunction with actively managing the number of people entering the Wilderness segments of the river corridor would provide an additional level of protection for the hydrologic processes ORV. If VERP monitoring indicates that the hydrologic processes ORV is being protected and enhanced, it is expected that park management would maintain the wilderness trailhead quota system as it is currently being implemented. However, if VERP monitoring indicates that the hydrologic ORV is not being protected and enhanced, then management actions would be implemented to reduce the number of people allowed to enter the wilderness (i.e., reduce the trailhead quota) to an appropriate level until subsequent monitoring indicates that the hydrologic ORV is being protected and enhanced.

Visitation to the Wilderness segments of the river corridor is seasonal in nature and is controlled through the park's trailhead quota system. This program gives park management the tools to ensure that the hydrologic processes ORV would be protected and enhanced. Thus, this alternative is expected to result in local, long-term, negligible to moderate, beneficial impacts on hydrology, water quality, and the hydrologic processes ORV. Under Alternative 3, additional day-use limits would be implemented in Little Yosemite Valley, resulting in a local, short- and long-term, negligible to minor, beneficial effect on the hydrologic ORVs by helping to minimize soil compaction and erosion in this area of the river corridor.

Impacts in Yosemite Valley. The hydrologic processes ORV in Yosemite Valley includes the river's meandering character, world-class waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes. Many of these qualities are insensitive to user-related impacts and would be more directly affected by development within the floodplain. User-related impacts could affect wetlands and other vegetation within the river corridor, which could result in the loss of vegetative cover, and increased erosion and sedimentation. In addition, visitor use of the river and use of camping and parking areas near the river could result in increased water pollution through stormwater runoff and other means.

Implementation of VERP under Alternative 3 would be the same as described under Alternative 2. The effects of these management actions in Yosemite Valley would vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures are expected to result in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate benefits to hydrology and water quality. Site-hardening activities, such as construction of boardwalks or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. The long-term effects associated with boardwalks is expected to be local, minor to moderate, and beneficial due to reduced trampling in sensitive vegetated areas and reduced impacts to surface and groundwater hydrology related to the creation of social trails, compacted soils, and trampled vegetation in riverside areas. Floodplains and their ability to accommodate flood flow would not be substantively affected by most management actions. Construction of boardwalks or other day-use facilities would be required to comply with floodplain guidance and would have local, long-term, negligible, adverse effects on floodplains.

The implementation of a daily segment limit system in the Valley is expected to provide an additional level of protection for the hydrologic processes ORV when used in conjunction with VERP. Although the daily segment limits for the Valley would likely be implemented only in the summer during periods of peak use (typically weekends and around holidays), limiting the number of visitors in the Valley during these periods would add an incremental level of protection to the hydrologic ORV. Restricting the total number of people having access to the river and its adjacent floodplain would help to control the potential for increased water quality impacts and damage to the riverbank.

Overall, Alternative 3 would limit the number of visitors entering the Valley during times of peak usage and add an incremental level of protection for the hydrologic processes ORV over that provided by the VERP program alone. However, this additional protection is expected to be relatively small, because the limit system under Alternative 3 would likely be implemented only a few times in the summer during periods of peak use. Implementation of the VERP program combined with a daily segment limit system for the Valley is expected to prevent visitor use from adversely affecting the hydrologic processes ORV. This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the Valley. Impacts on floodplains are expected to be negligible.

Impacts in the Gorge. The hydrologic processes ORV for the Gorge segment is related to the steep gradient of the river. This ORV is not readily susceptible to user-related impacts.

The effects of VERP management actions within the Gorge segment would vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures are expected to result in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate benefits to hydrology and water quality. Site-hardening activities would be considered only within areas zoned Attraction (2D) or Park Operations and Administration (3C). Site hardening, such as construction of parking or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. However, these facilities would be located in areas designated for higher intensity uses and would likely reduce the unofficial use of areas designated for less-intensive use. Therefore, the long-term effects associated with site improvements are expected to be local, minor, and beneficial.

The implementation of daily segment limit system in the Gorge segment is expected to have a negligible to minor, beneficial effect on the hydrologic processes ORV. Overall, implementation of the VERP program through monitoring of indicators for each zone, the implementation of appropriate management actions based on monitoring results, and the implementation of a daily segment limit system that would limit the number of people able to stop and enjoy the river in the Gorge segment during times of peak use would add an incremental level of protection for the hydrologic ORV over that provided by the VERP program alone. However, this additional protection is expected to be negligible to minor because daily segment limits would likely be implemented only a few times in the summer during times of peak use. Therefore, implementation of the VERP program in combination with a daily segment limit system for the Gorge segment is expected to prevent visitor use from adversely affecting the hydrologic processes ORVs. This would result in a long-term, minor, beneficial impact to hydrology, water

quality, and hydrologic processes in the Gorge. Impacts on floodplains are expected to be negligible.

Impacts in El Portal. The hydrologic processes ORV in the El Portal segment is related to the continuous rapids in that segment. This ORV is not readily affected by the definition of the river corridor boundary, the zoning designations, or visitor use.

The boundary for the El Portal segment of the river in Alternative 3 would be based on a quarter-mile boundary. The zoning under this alternative calls for low-intensity zoning (Discovery [2B], 323 acres) for the majority of the area south of the river and for higher development zoning (Park Operations and Administration [3C], 399 acres) in the vicinity of existing development areas and on other potentially developable sites. Approximately 131 acres within this boundary are zoned for Day Use (2C). It is recognized that even in those areas zoned for Park Operations and Administration (3C), ORVs within these areas must still be protected through site-specific design measures.

The proposed boundary and zoning designations for the El Portal segment would likely result in additional development or redevelopment within the areas zoned 3C. This could result in a loss of vegetation, soil compaction, and/or paving, with the potential for increased erosion and increased runoff from developed areas and local, long-term, minor, adverse effects on hydrology and water quality. In addition, some development could occur within the floodplain, resulting in a local, long-term, minor, adverse effect on floodplain values. These minor adverse effects would be minimized through careful site design; Best Management Practices to limit vegetation loss, soil compaction, and erosion; and implementation of appropriate stormwater treatment measures.

Implementation of the VERP program within this segment would include monitoring of various indicators for each zone. Management actions to address exceeded standards would differ in the two zones because areas zoned Discovery (2B) are designated for lower use levels and areas zoned Park Operations and Administration (3C) are designated for higher intensity use. Management actions to address noncompliance with established standards could include educational efforts for employees and visitors, restrictions on uses within the river, closure and restoration of areas, or construction of improvements such as boardwalks, day-use facilities, or stormwater treatment systems.

The effects of management actions would vary by the action taken. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures are expected to result in local, short- and long-term, minor, benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate, benefits to hydrology and water quality. Site hardening would be considered in areas zoned 3C only. Site hardening could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. However, site hardening is expected to reduce the unofficial use of areas designated for less-intensive use. Therefore, the long-term effects associated with site improvements is expected to be local, minor, and beneficial. Effects on floodplains would primarily be related to construction activities within the floodplain. Since these activities would be expected to comply with floodplain requirements, effects on floodplains and the ability to accommodate flood flow is expected to be adverse but negligible.

Alternative 3 would be expected to have local, long-term, minor beneficial impacts on hydrology and water quality and a negligible impact on floodplains and the hydrologic processes ORV in the El Portal segment.

Impacts in Wawona. The impoundment near Wawona is described as having excellent water quality, which is a hydrologic processes ORV. The Wawona segments themselves do not represent a hydrologic processes ORV, but the Below Wawona segment includes the free-flowing condition of the river and continual whitewater cascades, which are ORVs. The water quality element of the Impoundment segment is the most susceptible to user-related impacts.

Typical management actions that might be taken under VERP have been described above. In general, the less restrictive measures would have short- and long-term, negligible to minor, beneficial impacts. More restrictive measures are expected to result in long-term, minor to moderate benefits. Management actions that include construction could have local, short-term, minor adverse effects on hydrology and water quality and long-term, negligible, adverse effects on floodplains. These activities would be designed to reduce effects on sensitive areas within the segment, and thus would be expected to have long-term, minor, beneficial effects.

The implementation of a daily segment limits for the Wawona segments is expected to provide an incremental level of protection for the hydrologic processes ORV when used in conjunction with VERP. Segment limits for this area would likely only be implemented in the summer during periods of peak use (typically weekends and around holidays), thus limiting the number of visitors who can stop and enjoy the river during these periods. Therefore, implementing VERP and the resulting management actions, in conjunction with daily segment limits, is expected to have local, long-term, minor, beneficial impacts on hydrology and water quality and a negligible impact on floodplains and the related hydrologic processes ORV for the Wawona segments.

Overall, Alternative 3 is expected to have local, long-term, negligible to moderate benefits on hydrology, water quality, and the Impoundment and Below Wawona segments' hydrologic processes ORV. Adverse effects to floodplains from any construction activities would be local, long term, and negligible.

Summary of Alternative 3 Impacts. Overall, implementation of the VERP program, based on the management zoning developed in the Merced River Plan (NPS 2000c), and daily segment limits would result in a long-term, minor, beneficial impact on hydrology, water quality, and hydrologic processes within the river corridor and a long-term, negligible, adverse effect on floodplains. The above, coupled with existing park management policies and elements of the existing Merced River Plan, would help to ensure that all elements of the hydrologic processes ORV continue to be protected and enhanced on a segment-by-segment basis within the Merced River corridor.

Cumulative Impacts

Cumulative effects to hydrology, floodplains, and water quality were described under Alternative 1.

Overall, past, present, and reasonably foreseeable cumulative actions, in combination with Alternative 3, could have a long-term, minor, beneficial effect on hydrology, floodplains, and water quality in the Merced River corridor.

Impairment

Alternative 3 would provide long-term, minor, beneficial impacts to water quality, floodplain values, and hydrologic processes in the Merced River corridor. As a result, Alternative 3 would not impair the hydrologic resources of the park for future generations.

Wetlands

Analysis

The following discussion provides an overview of the types of impacts on wetland resources and the biological ORVs that could occur within each segment of the Merced River corridor under Alternative 3.

Under Alternative 3, establishment of segment-based limits would allow park management to take actions to reduce visitor levels within each river corridor segment if limits for a segment were exceeded, regardless of whether specific visitor-related impacts had been identified. This alternative would also provide an annual maximum limit on park visitation. A user capacity program based on an annual maximum limit and daily segment limits would provide a mechanism for limiting the number of visitors by segment if limits were exceeded.

As with Alternative 2, VERP monitoring would provide data on the condition of wetland resources, allowing for other management actions as needed to ensure that VERP standards would not be exceeded. For example, monitoring might show that wetlands are being negatively affected by visitor use. Under the VERP management and monitoring program, specific management actions would be prescribed to address such visitor-related impacts. Measures such as visitor education or site hardening could allow for greater visitor access to an area with less adverse effect on protected resources.

Additionally, visitor levels could be reduced below the daily segment limits and annual maximum, depending on VERP monitoring results. Compared to Alternative 1, the establishment of daily segment limits, an annual maximum visitor limit, and VERP monitoring under Alternative 3 could result in local, long-term, minor to moderate, beneficial effects on wetland resources.

Management actions associated with the redirection of visitors from wetlands and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 3, user capacity in the Wilderness segments of Yosemite National Park would be managed through an annual maximum limit on park visitation. In addition, the application of daily segment limits would result in the continued implementation of the trailhead quota system, which would limit use to existing levels. Maintaining existing user levels would have a minor, beneficial effect on wetlands and the biological ORVs in the Wilderness segments compared to Alternative 1. Under Alternative 3, additional day-use limits would be implemented in Little Yosemite Valley, also resulting in a local, long-term, minor, beneficial effect on wetlands in this specific wilderness area.

Compared to Alternative 1, implementation of the VERP program in wilderness areas would provide additional resource-specific monitoring data on the condition of wetlands and visitor experience that would inform future management decisions.

Management actions implemented in response to VERP monitoring for the indicators described in Chapter II could include educating visitors, closing trails and restoring vegetation, or temporarily or permanently closing degraded or sensitive areas for restoration or conservation. In addition, the number of people could be limited by reducing wilderness trailhead quotas or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational efforts, would likely result in local, long-term, negligible to minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas, are expected to result in local, long-term, minor, beneficial effects on wilderness wetlands and the biological ORVs for the Wilderness segments of the Merced River.

Under Alternative 3, the application of an annual maximum limit on park visitation user capacity limits by segment, and the VERP program within Wilderness segments, would have an overall long-term, minor, beneficial effect on wetlands and the biological ORVs in wilderness areas compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 3, user capacity in Yosemite Valley would be addressed through the establishment of an annual maximum limit on park visitation and user capacity daily segment limits specific to the Valley segment of the river corridor. Management actions would be aimed at reducing the number of park users if the Valley daily segment limits were exceeded. Potential management actions to reduce the number of people in the Valley are described in Chapter II. Limits for all river corridor segments would be based closely on existing use. Therefore, implementation of daily segment limits that maintain existing levels of use for the Valley is expected to have a beneficial effect on wetland and the biological ORVs compared to the No Action Alternative.

The VERP program would provide resource-specific data on the condition of resources and visitor experience in the Valley segment that would inform future management decisions. VERP indicators have been selected to provide overall information on the health of resources throughout the river corridor and are described in Chapter II. Management actions implemented in response to VERP monitoring could include educating visitors on the effects of riverbank erosion and social trails on riparian wetlands, closing and restoring wetlands along social trails, or temporarily or permanently closing degraded or sensitive areas for restoration or conservation. In addition, the number of people could be limited by establishing entrance station limits or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Impacts on wetland resources in the Valley segment would be local, long term, minor to moderate, and beneficial. Alternative 3 would have an overall long-term, minor to moderate, beneficial effect on wetlands and the biological ORVs in the Valley compared to Alternative 1.

Impacts in the Gorge. Under Alternative 3, user capacity in the Gorge segment would be addressed through the establishment of an annual maximum limit on park visitation and user capacity daily segment limits specific to that segment of the river corridor. Management actions would be aimed at reducing the number of park users if the parkwide limits or a Gorge daily segment limit were exceeded. Potential management actions to reduce the number of people in the Gorge segment include eliminating formal and informal parking areas and requiring permits or reservations for picnic areas. Limits for all river corridor segments would be based closely on existing use. Therefore, implementation of daily segment limits that maintain existing levels of use for the Gorge segment is expected to have a negligible, beneficial effect on wetlands and the biological ORVs compared to the No Action Alternative, which is expected to result in use increases throughout the park.

The implementation of VERP monitoring in the Gorge segment would provide data on the condition of resources that would guide future management decisions. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken and could range from negligible to minor, beneficial effects on wetland resources for the Gorge segment. Alternative 3 would have an overall long-term, minor, beneficial effect on wetlands and the biological ORVs in the Gorge segment when compared to Alternative 1.

Impacts in El Portal. Under Alternative 3, user capacity in the El Portal segment of the river corridor would be addressed through an annual maximum limit on park visitation and a user capacity limit specific to the El Portal segment of the river corridor. Management actions would be aimed at reducing the number of park users if the annual limit or El Portal daily segment limits were exceeded. Potential management actions to reduce the number of people in the El Portal segment include eliminating formal and informal parking areas and establishing additional rafting/kayaking or fishing restrictions. Limits for the El Portal segment would allow for an increase of employees and other residents over existing levels. Therefore, implementation of daily segment limits, with a concomitant increase in the development of housing in the area, is expected to have an adverse effect on wetland and the biological ORVs compared to the No Action Alternative.

Alternative 3 would expand the El Portal boundary to a quarter mile on both the north and south sides of the river, as measured from the riverbanks. With this boundary, 853 acres would be included within the river corridor in El Portal. Compared to Alternative 1, the area within the river corridor boundary under Alternative 3 would be over four times greater. Under this alternative, El Portal would have a base zone of 2B on the south side of the river; the large, previously developed tracts primarily located north of the river, zoned 3C and several more sensitive areas both north and south of the river would be zoned 2C. Restrictions in zones 2B and 2C preclude most types of new development (e.g., campgrounds and lodging, new roads) that would have the potential to adversely affect native wetlands. Portions of El Portal zoned 3C (e.g., the Trailer Village, Old El Portal) would allow redevelopment as well as additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., fire suppression in the vicinity of structures), minor to moderate, adverse effects on native wetlands. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to wetlands (e.g., conversion of wetland habitat to developed facilities) would remain. Zoning within the revised El Portal river

corridor boundary would allow for park administrative uses (3C) on 399 acres (46% of the total); day-use facilities and uses would be allowed on 131 acres, and 323 acres would be zoned for low-intensity uses (zone 2B, Discovery). Under Alternative 3, all ORVs would be protected regardless of the zoning designation or whether or not they occur within or outside of the river corridor boundary. Overall, since a larger are is included within the corridor boundary and zoned, there is less potential for development in El Portal under this alternative than under Alternative 1, resulting in a minor benefit to wetlands compared to Alternative 1.

The implementation of VERP monitoring in El Portal would result in data that would guide future management decisions regarding the wetland resources in this segment. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken and would result in minor to moderate, beneficial effects on wetland and the biological ORVs for the El Portal segment.

Local, short- and long-term, moderate, adverse effects to wetlands could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 3 through the application of zoning within the larger, revised river corridor boundary (as compared to Alternative 1). The revised boundary would require the application of the Merced River Plan management elements (as described under the Alternative 1 analysis) to a larger area and the implementation of the VERP program within the El Portal segment.

The revised El Portal river corridor boundary under Alternative 3 is expected to have a local, long-term, minor, beneficial effect on wetland resources in the El Portal segment compared to Alternative 1, as the corridor area would be increased. Alternative 3 would therefore have an overall local, long-term, minor, beneficial effect on wetlands and the biological ORVs in the El Portal segment compared to Alternative 1.

Impacts in Wawona. Under Alternative 3, user capacity in the Wawona segments would be addressed through the establishment of an annual maximum limit on park visitation and a user capacity limit specific to that segment of the river corridor. Management actions would be aimed at reducing the number of park users if the limit for the Wawona segments were exceeded. Potential management actions to reduce the number of people in the Wawona segments are described in Chapter II. Segment limits would be based closely on existing use. Therefore, implementation of daily segment limits that maintain existing levels of use for the Wawona segments is expected to have a beneficial effect on wetlands and the biological ORVs compared to the No Action Alternative.

Data obtained through VERP monitoring in the Wawona segment would guide future management decisions regarding wetland resources as well as visitor experience in this segment. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses would likely result in local, long-term, minor, beneficial effects on wetland resources. Higher intensity management responses are expected to result in local, long-term, moderate, beneficial effects on wetland resources in the Wawona segments. Overall, Alternative 3 would have a long-term, minor to moderate, beneficial impact on wetlands and the biological ORVs in the Wawona segments.

Summary of Alternative 3 Impacts. Implementation of an annual maximum limit on park visitation, would likely result in long-term beneficial effects on wetland resources compared to Alternative

1. Implementation of daily segment limits would generally maintain existing user levels, with the exception of the El Portal segment, where an increase of employees and other residents would be allowed. Therefore, daily segment limits are expected to have a beneficial effect on wetlands in all areas of the corridor including El Portal, where an increase in the area included within the boundary would reduce the potential for future development compared to the No Action Alternative.

The implementation of VERP would inform management planning and drive the implementation of management actions designed to protect wetland resources, thus resulting in beneficial effects. The revised El Portal river corridor boundary would allow for the application of these management elements to a much greater area than that described in Alternative 1. Overall, Alternative 3 would have local, short- and long-term, minor to moderate, beneficial effects on wetlands and the biological ORVs. In addition, compliance with existing park policies would help ensure that the biological ORVs related to wetlands are protected and enhanced.

Cumulative Impacts

Cumulative effects on wetlands would be the same as described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor beneficial effect on wetlands and wetland-related ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 3 could have a net local, long-term, minor, beneficial effect on parkwide wetlands and the biological ORVs of the Merced River corridor.

Impairment

Alternative 3 would have a local, long-term, minor to moderate, beneficial effect on parkwide wetlands and biological ORVs of the Merced River corridor and therefore would not impair wetland resources for future generations.

Vegetation

Analysis

The following discussion provides an overview of the types of impacts on vegetation resources and the biological ORVs that could occur within each segment of the Merced River corridor under Alternative 3.

Under Alternative 3, establishment of segment-based limits would allow park management to take actions to reduce visitor levels within river corridor segments if the limits were exceeded, regardless of whether specific visitor-related impacts had been identified. This alternative would also provide an annual maximum limit on park visitation. A user capacity program based on an annual maximum limit and daily segment limits would provide a mechanism for limiting visitor numbers by segment if the limits were exceeded.

As with Alternative 2, VERP monitoring would provide data on the condition of resources, allowing for other management actions as needed to ensure that VERP standards would not be exceeded. For example, monitoring might show that vegetation is being negatively affected by visitor use. Under the VERP program with daily segment limits, specific management actions would be prescribed to address such visitor-related impacts. Measures such as visitor education or site hardening could allow for greater visitor access to an area with less adverse effect on protected resources. Additionally, visitor levels could be reduced below the daily segment limits

or annual maximum, depending on VERP monitoring results. Compared to Alternative 1, the establishment of daily segment limits, an annual maximum visitor limit, and the VERP program under Alternative 3 could result in local, long-term minor to moderate, beneficial effects on vegetation resources.

Management actions associated with the redirection of visitors from areas with sensitive vegetation and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 3, user capacity in the Wilderness segments of the river corridor would be managed through an annual maximum limit on park visitation. In addition, daily segment limits would result in the continued use of the trailhead quota system, which would limit use to current levels. Maintaining existing user levels would have a minor, beneficial effect on vegetation and the biological ORVs in the Wilderness segments compared to Alternative 1. Implementation of the VERP program with daily segment limits in wilderness areas would provide resource-specific data to inform future management decisions.

Management actions in response to VERP monitoring for the indicators described in Chapter II (see table II-5) could range from closing trails and restoring vegetation to temporarily or permanently closing highly degraded or sensitive areas for restoration or conservation. Visitor levels could be limited by reducing trailhead quotas or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions as a result of VERP monitoring would vary depending on the type of action taken. Low-intensity management responses, such as visitor education, would likely result in local, long-term, negligible to minor, beneficial effects on vegetation resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas, are expected to result in local, long-term, minor, beneficial effects on wilderness vegetation and the biological ORVs for the Wilderness segments of the Merced River.

Under Alternative 3, an annual maximum limit on visitors to the park, user capacity limits by segment, and the VERP program would have an overall long-term, minor, beneficial effect on native vegetation and the biological ORVs in the Wilderness segments compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 3, user capacity in Yosemite Valley would be addressed through the establishment of an annual maximum limit on park visitation and a user capacity limit specific to the Valley segment of the river corridor. Management actions would be aimed at reducing the number of park users if the Valley daily segment limit were exceeded. Limits recommended for all river corridor segments would be based closely on existing use. Therefore, daily segment limits that maintain existing use levels for the Valley are expected to have a beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

Implementation of the VERP program with daily segment limits would provide resource-specific data that would inform future management decisions. VERP indicators have been established to

provide overall information on the health of resources throughout the river corridor (see table II-5). Management actions implemented in response to VERP monitoring could range from educating visitors on the effects of social trails on riparian vegetation to closing and restoring vegetation on social trails. In addition, visitor levels could be limited by establishing entrance station limits or enacting seasonal restrictions on access to portions of the river corridor.

The impacts of management actions implemented as a result of VERP monitoring would vary depending on the type of action taken. Impacts on vegetation resources in the Valley segment would be local, long term, minor to moderate, and beneficial. Alternative 3 would have an overall long-term, minor to moderate, beneficial effect on native vegetation and the biological ORVs in the Valley segment of the river corridor compared to Alternative 1.

Impacts in the Gorge. Under Alternative 3, user capacity in the Gorge segment would be addressed through the establishment of an annual maximum limit on park visitation and a user capacity limit specific to that segment of the river corridor. Management actions would be aimed at reducing user levels if the parkwide limits or daily segment limit were exceeded. Potential management actions to reduce the number of visitors in the Gorge segment include eliminating formal and informal parking areas and requiring permits or reservations for picnic areas. Recommended daily segment limits would be based closely on existing use. Therefore, implementation of daily segment limits that maintain existing levels of use in the Gorge segment would likely have a negligible, beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

Implementation of VERP monitoring in the Gorge segment would provide data on the condition of resources that would guide future management decisions. The impacts of management actions as a result of VERP monitoring would vary depending on the type of action taken and would likely be negligible to minor, beneficial effects on vegetation and the biological ORVs. Alternative 3 would have an overall long-term, minor, beneficial effect on native vegetation and the biological ORVs in the Gorge segment compared to Alternative 1.

Impacts in El Portal. Under Alternative 3, user capacity in the El Portal segment of the river corridor would be addressed through the establishment of an annual maximum limit on park visitation and a daily segment limit specific to El Portal. Monitoring would result in specific management actions aimed at reducing the number of park users if the annual limit or El Portal daily segment limit were exceeded. Potential management actions to reduce the number of people in the El Portal segment include eliminating formal and informal parking areas and establishing additional rafting, kayaking, or fishing restrictions. Segment limits for El Portal would allow an increase of employees and other residents over existing levels. Therefore, implementation of daily segment limits, with a concomitant increase in the development of housing in the area, is expected to have an adverse effect on vegetation and the biological ORVs compared to the No Action Alternative.

Alternative 3 would expand the El Portal boundary to a quarter mile on either side of the river, as measured from the riverbanks on both the north and south sides. With this boundary, 853 acres would be included within the river corridor in El Portal. Compared to Alternative 1, the area within the river corridor boundary under Alternative 3 would be over four times greater. Under this alternative, El Portal would have a base zone of 2B on the south side of the river; the large, previously developed tracts primarily located north of the river would be zoned 3C; and several more sensitive areas both north and south of the river would be zoned 2C. Restrictions in zones

2B and 2C preclude most types of new development (e.g., campgrounds and lodging or new roads) that would have the potential to adversely affect native vegetation. Redevelopment as well as additional development would be allowed in portions of El Portal zoned 3C. Potential development could have both short-term (e.g., construction-related) and long-term (e.g., fire suppression in the vicinity of structures), minor to moderate, adverse effects on native vegetation. Although mitigation measures would reduce impacts, long-term, minor to moderate, adverse effects to native vegetation (e.g., conversion of habitat to developed facilities) would remain. Zoning within the revised El Portal river corridor boundary would allow for park administrative uses (zone 3C) on 399 acres (46% of the total area); day-use facilities and uses would be allowed on 131 acres; and 323 acres would be zoned for low-intensity uses (zone 2B). Overall, since a larger are is included within the corridor boundary and zoned, there is less potential for development in El Portal under this alternative than under Alternative 1, resulting in a minor benefit to native vegetation compared to Alternative 1.

Under Alternative 3, all ORVs would be protected regardless of the zoning or whether or not they occur within or outside of the river corridor boundary. In addition, VERP monitoring in El Portal would result in data that would guide future management decisions regarding the vegetative resources in this segment. Management actions based on the VERP program with daily segment limits would vary depending on the type of action taken and would result in minor to moderate, beneficial effects on vegetation and the biological ORVs in the El Portal segment.

Local, short- and long-term, moderate, adverse effects to native vegetation could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 3 through the application of zoning within the larger, revised river corridor boundary (as compared to Alternative 1). This would require application of the Merced River Plan management elements (as described under the Alternative 1 analysis) to a larger area and the implementation of the VERP program within the El Portal segment.

With an increased area included within the river corridor boundary, the revised El Portal boundary under Alternative 3 is expected to have a local, long-term, minor, beneficial effect on vegetation resources in the El Portal segment compared to Alternative 1. Alternative 3 would therefore have an overall local, long-term, minor, beneficial effect on native vegetation and the biological ORVs in the El Portal segment compared to Alternative 1.

Impacts in Wawona. Under Alternative 3, user capacity in the Wawona segments of the river corridor would be addressed through the establishment of an annual maximum limit on park visitation and a daily segment limit. Management actions based on monitoring would be aimed at reducing the number of park users if the Wawona limits were exceeded. Potential management actions to reduce visitor levels in the Wawona segments are described in Chapter II. Limits would be based closely on existing use. Therefore, daily segment limits that maintain existing levels of use for the Wawona segments are expected to have a beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

Data obtained through VERP monitoring in the Wawona segments would guide future management decisions regarding vegetation resources. The impacts of management actions implemented as a result of the VERP program with daily segment limits would vary depending on the type of action taken. Low-intensity management responses would likely result in local, long-term, minor, beneficial effects on vegetation resources. Higher intensity management responses

are expected to result in local, long-term, moderate, beneficial effects on vegetative resources in the Wawona segments. Overall, Alternative 3 would have a long-term, minor to moderate, beneficial impact on native vegetation and the biological ORVs in the Wawona segments.

Summary of Alternative 3 Impacts. Implementation of an annual maximum limit on park visitation, would likely result in long-term, beneficial effects on vegetation resources compared to Alternative 1. Implementation of daily segment limits would generally maintain existing user levels, with the exception of the El Portal segment, where an increase of employees and other residents would be allowed. Therefore, daily segment limits are expected to have a beneficial effect on vegetation in all areas of the corridor including El Portal, where an increase in the area included in the corridor boundary would result in a beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

The implementation of VERP monitoring would inform management planning and drive management actions designed to protect vegetation resources, thus resulting in beneficial effects. The revised El Portal river corridor boundary would allow for the application of management elements to a much greater area than that described for Alternative 1. Overall, Alternative 3 would have local, short- and long-term, minor to moderate, beneficial effects on vegetation and the biological ORVs. Compliance with existing park policies would help ensure that the biological ORVs related to vegetation are protected and enhanced.

Cumulative Impacts

Cumulative effects to vegetation under Alternative 3 would be the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on vegetation and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 3, could have a net local, long-term, minor, beneficial effect on parkwide vegetation and the biological ORVs of the Merced River corridor.

Impairment

Alternative 3 would have a local, long-term, minor to moderate, beneficial effect on parkwide vegetation as well as the biological ORVs of the Merced River corridor and therefore would not impair vegetation resources for future generations.

Wildlife

Analysis

The following discussion provides an overview of the types of impacts to wildlife resources and the biological ORVs that could occur within each segment of the Merced River corridor under Alternative 3. Under Alternative 3, daily segment limits would limit the number of park visitors in each segment to approximately existing levels. In the short term, visitor numbers are expected to be similar to those under Alternative 1. However, in the long term, visitor numbers under Alternative 3 would likely be lower than under Alternative 1 due to VERP monitoring and management actions that could limit the number of park visitors in each segment to approximately existing levels and ensure that the daily segment limits are not exceeded. Although the annual maximum limit on park visitation under Alternative 3 would be somewhat higher than current annual visitation, it is likely to be lower than the long-term increases expected under Alternative 1, resulting in beneficial impacts to wildlife.

Short-term, adverse effects to wildlife could occur under Alternative 3 through implementation of daily segment limits that would allow for some growth in employee housing in El Portal and Wawona. However, long-term, beneficial impacts to wildlife would occur through implementation of daily segment limits and VERP management actions to maintain visitor activities and use in the park at a level that would protect wildlife resources and the biological ORVs.

Management actions associated with the redirection of visitors from areas with sensitive wildlife habitat and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 3, user capacity within the Wilderness segments of the Merced River would continue to be addressed through trailhead quotas and the monitoring of resource conditions. Maintenance of existing user levels through daily segment limits is expected to have a negligible, beneficial effect on wildlife and the biological ORVs in the Wilderness segments compared to Alternative 1. Under this alternative, park management would have the capacity to reduce limits as needed. The reduction of limits in response to VERP monitoring is expected to result in local, short- and long-term, minor, beneficial effects on wildlife resources. Alternative 3 would also include the VERP program, resulting in additional resource-specific monitoring of wildlife indicators within the Wilderness segments of the park and subsequent management actions. VERP indicators to be monitored in Wilderness segments of the Merced River are discussed in Chapter II (see table II-5).

Existing limits based on resource protection goals currently restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows and impacts to associated wildlife species. Under Alternative 3, additional day-use limits would be implemented in Little Yosemite Valley, resulting in a local, short- and long-term, negligible to minor, beneficial effect on wildlife.

Impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced wilderness trailhead quotas, and closure of areas would likely result in local, short- and long-term, negligible to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the trailhead quota system, implementation of the VERP program with user limits by segment and subsequent management actions would likely have overall local, short- and long-term, minor, beneficial impacts to wildlife resources and the biological ORVs in wilderness areas.

Impacts in Yosemite Valley. As described above, Alternative 3 would include implementation of the VERP program as well as segment user capacity limits that would limit the number of river users in each segment of the river corridor in Yosemite Valley to near existing use levels. The user capacity program would result in additional resource-specific monitoring of indicators within Yosemite Valley. Wildlife-related VERP indicators to be monitored in the Yosemite Valley segment are discussed in Chapter II.

Implementation of VERP monitoring in the Valley would result in data on the condition of wildlife resources that would guide future wildlife management and visitor experience decisions. Monitoring of a user capacity limit specific to the Valley segment of the river corridor would result in specific management actions aimed at reducing the number of park users if the Valley daily segment limit were exceeded. Potential management actions to reduce the number of people in the Valley segment include reducing the number of commercial bus permits issued; reducing the number of YARTS buses; turning people away at the entrance stations when limits are reached; or instituting a day-use reservation system. Limits for all river corridor segments would be based closely on existing use and would prevent the increased visitor-use effects to wildlife that are expected under Alternative 1 based on the projected increase in visitor demand. Therefore, implementation of daily segment limits that maintain existing use levels for the Valley is expected to have a local, moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

Impacts of the management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of food storage restrictions, and closure of areas would likely result in local, short- and long-term, moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Alternative 3 would include daily segment limits set close to existing use levels for each segment and implementation of VERP monitoring and management actions, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 3 provides protection for native wildlife and the biological ORVs in Yosemite Valley and would result in a net local, short- and long-term, moderate, beneficial effect.

Impacts in the Gorge. Under Alternative 3, user capacity in the Gorge segment would be addressed through establishment of a user capacity limit specific to the Gorge segment of the river corridor and set close to existing use levels. VERP monitoring would provide data on the condition of wildlife resources that would guide future management decisions. VERP management actions would be aimed at reducing the number of park users if the Gorge daily segment limit were exceeded. Potential management actions to reduce the number of people in the Gorge segment include eliminating formal and informal parking areas and requiring permits or reservations for picnic areas. Limits for all river corridor segments would be based closely on existing use and would prevent the increased visitor-use effects to wildlife that are expected under Alternative 1 based on the projected increase in visitor demand. Therefore, daily segment limits that maintain

existing use levels for the Gorge segment are expected to have a local, minor to moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

Impacts of the management actions implemented as a result of VERP monitoring with user limits by segment would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Implementation of a permit reservation system for picnic areas, increased enforcement of food storage restrictions, and closure of areas would likely result in local, short- and long-term, minor to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Alternative 3 would implement daily segment limits set close to existing use levels as well as the VERP program, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 3 would have a local, short- and long-term, minor to moderate, beneficial effect on native wildlife and the biological ORVs within the Gorge segment.

Impacts in El Portal. Under Alternative 3, the river corridor boundary within El Portal would include habitat within a quarter-mile of the Merced River. The boundary includes the biological ORVs (e.g., Crane Creek and other tributaries to the Merced River and associated riverine habitats, habitat south of the Merced River) within the El Portal Administrative Site. Alternative 3 would designate low-intensity zoning (2B) for the majority of the area south of the river and higher intensity zoning (3C) in the vicinity of existing development areas and on other potentially developable sites. In addition, Alternative 3 would also designate several areas north of the river, such as Crane Creek and habitat to the east, as lower intensity zoning (2C).

Examples of how management zoning would affect native wildlife and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Under its 2C zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, minor to moderate, beneficial effect on this ORV.
- Large portions of El Portal would be zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development or redevelopment (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development or redevelopment could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on native wildlife. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to wildlife (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.
- The revised boundary would increase the area included in the river corridor from 193 acres to 853 acres. Although 399 acres of habitat would be zoned 3C, allowing development of park operations and administration facilities, this development would be primarily concentrated in the vicinity of existing development. Designation of 454 acres of habitat zoned 2B and 2C (encompassing the biological ORVs south of the river and in some areas supporting wildlife

resources north of the river) would limit the development intensity in these regions resulting in, a local, long-term, minor to moderate, beneficial effect on wildlife resources and the biological ORVs.

Under Alternative 3, user capacity in the in the El Portal segment of the river corridor would be addressed through the establishment of a user capacity limit specific to the El Portal segment and set close to the existing use levels. The addition of the VERP program would result in data on the condition of wildlife resources that would guide future management decisions in El Portal. VERP management actions would be aimed at reducing the number of park users if the El Portal limits were exceeded. Potential management actions to reduce the number of people in the El Portal segment include eliminating formal/informal parking areas or establishing additional rafting, kayaking, or fishing restrictions. Limits for the El Portal segment would be based closely on existing use, with some growth in employee housing if VERP monitoring indicates that wildlife resources or the biological ORVs would not be adversely affected. Therefore, implementation of daily segment limits that maintain use near existing levels for the El Portal segment is expected to have a local, minor to moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

The impacts of VERP monitoring and management actions coupled with daily segment limits would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions are expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

The application of management zoning and VERP monitoring and management actions with segment user capacity limits set close to existing use levels would protect and enhance wildlife and the biological ORVs in El Portal. The zoning in El Portal, in combination with an increased employee use limit, would allow for road repair as well as additional development or redevelopment of park administration facilities and employee housing, which could have short- and long-term, adverse effects on native wildlife. The biological ORVs within a quarter-mile of the river within the El Portal Administrative Site are located within the proposed river corridor boundary (e.g., Crane Creek and other tributaries to the Merced River and some associated riverine habitats, habitat south of the Merced River); however, the criteria and considerations (including the Section 7 determination process) would protect the biological ORVs both within and outside the boundary. Overall, the application of an increased river boundary and zoning, the VERP monitoring process, daily segment limits, and resulting management actions within El Portal would have a local, short- and long-term, minor, beneficial effect on native wildlife and the biological ORVs.

Impacts in Wawona. Under Alternative 3, user capacity in the Wawona segments would be addressed through the establishment of a user capacity limit specific to that segment of the river corridor and set close to existing use levels. Monitoring would result in specific management actions aimed at reducing the number of park users if the limit for the Wawona segments were exceeded. Potential management actions to reduce the number of people in the Wawona segments include instituting a day-use reservation system and reducing the number of commercial bus permits issued. Limits recommended for the Wawona segments would be based closely on existing use, but would allow for some growth in employee housing if VERP monitoring indicates that wildlife resources or the biological ORVs would not be adversely

affected. Therefore, implementation of daily segment limits that maintain use near existing levels for the Wawona segments is expected to have a local, minor, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

Impacts of management actions implemented as a result of VERP monitoring and the segment user capacity limits would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions are expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact.

Overall, Alternative 3 would have a local, short- and long-term, minor, beneficial impact on native wildlife and the biological ORVs in the Wawona segments.

Summary of Alternative 3 Impacts. Overall, limits on facilities through management zoning in El Portal in combination with VERP monitoring and management actions would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. Implementation of daily segment limits set close to existing use levels would allow park management to limit visitation to specific segments of the river corridor. Although the annual maximum limit on park visitation under Alternative 3 is somewhat higher than current annual visitation, it is likely to be lower than the long-term increases expected under Alternative 1, resulting in minor, beneficial impacts to wildlife. The revised river corridor boundary at El Portal would include the biological ORVs within a quarter-mile of the river within the El Portal Administrative Site, resulting in a beneficial effect on wildlife resources. Alternative 3 would result in a local, short- and long-term, minor to moderate, beneficial impact on native wildlife and the biological ORVs within the river corridor. Compliance with existing park policies would help ensure that the biological ORVs related to wildlife are protected and enhanced.

Cumulative Impacts

Cumulative effects to wildlife from past, present, and foreseeable future actions would be the same as those discussed for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wildlife and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 3, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife and the biological ORVs of the Merced River corridor.

Impairment

Alternative 3 would have a local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife as well as the biological ORVs of the Merced River corridor and therefore would not impair wildlife resources for future generations.

Rare, Threatened, and Endangered Species

Analysis

The following discussion provides an overview of the types of impacts to rare, threatened, and endangered species and the biological ORVs that could occur within each segment of the Merced River corridor. Under Alternative 3, daily segment limits would limit the number of park visitors in each segment to approximately existing levels. In the short term, visitor numbers under

Alternative 3 are expected to be similar to those under Alternative 1. However, in the long term, visitor numbers under Alternative 3 would likely be lower than under Alternative 1 due to VERP monitoring and management actions that could limit the number of park visitors within each segment to approximately existing levels and ensure that the daily segment limits are not exceeded. Although the annual maximum limit on park visitation under Alternative 3 would be higher than current annual visitation, it is likely to be lower than the long-term increases expected under Alternative 1, resulting in beneficial impacts to rare, threatened, and endangered species. Short-term, adverse effects to rare, threatened, and endangered species could occur under Alternative 3 through implementation of daily segment limits that would allow for some growth in employee housing in El Portal and Wawona. However, long-term, beneficial impacts to special-status species would occur with implementation of daily segment limits and VERP monitoring and management actions to maintain visitor activities and use of the park at a level that would protect special-status species and the biological ORVs.

Management actions associated with the redirection of visitors from areas with known rare, threatened and endangered species and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 3, user capacity within the Wilderness segments of the Merced River would continue to be addressed through trailhead quotas and the monitoring of wilderness resource conditions. Maintenance of existing user levels through daily segment limits is expected to have a negligible, beneficial effect on rare, threatened, and endangered species and the biological ORVs in the Wilderness segments compared to Alternative 1. Any reduction in the daily segment limits in response to VERP monitoring would likely result in local, short- and long-term, minor, beneficial effects on rare, threatened, and endangered species.

Existing limits based on resource protection goals currently restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows (a habitat for rare, threatened, and endangered species) and the biological ORVs. Under Alternative 3, additional day-use limits would be implemented in Little Yosemite Valley, resulting in a local, short- and long-term, negligible to minor, beneficial effect on rare, threatened, and endangered species.

The impacts of management actions implemented as a result of VERP monitoring would vary depending on the action taken. Management actions such as visitor education would likely have a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced wilderness trailhead quotas, and closure of areas are expected to result in local, short- and long-term, negligible to moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the trailhead quota system, implementation of daily segment limits and VERP monitoring and management actions would likely have local, short- and long-term, minor, beneficial impacts to rare, threatened, and endangered species and the biological ORVs in wilderness areas.

Impacts in Yosemite Valley. Alternative 3 would implement daily segment limits and the VERP program, which would limit the number of river users in each segment of the river corridor in Yosemite Valley to near existing levels. The user capacity program would result in additional resource-specific monitoring of indicators within Yosemite Valley. VERP indicators to be monitored in the Yosemite Valley segment are discussed in Chapter II.

Implementation of VERP monitoring in the Valley would result in data on the condition of rare, threatened, and endangered species that would guide future resource management and visitor experience decisions. A user capacity limit specific to the Valley segment of the river corridor would result in specific management actions aimed at reducing the number of park users if the limit was exceeded. Potential management actions to reduce the number of people in the Valley segment include reducing the number of commercial bus permits issued; reducing the number of YARTS buses; turning people away at the entrance stations when limits are reached; or institution of a day-use reservation system. Limits for all river corridor segments would be based closely on existing use and would prevent increased visitor-use effects to special-status species compared to Alternative 1. Therefore, implementation of daily segment limits that maintain existing use levels for the Valley are likely to have a local, moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The impacts of management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of trail food storage restrictions, and closure of areas would likely result in local, short- and long-term, moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Alternative 3 would include daily segment limits set close to existing use levels for each segment and implementation of the VERP program, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 3 would provide protection for rare, threatened, and endangered species and the biological ORVs in Yosemite Valley and would result in a net local, short- and long-term, moderate, beneficial effect.

Impacts in the Gorge. Under Alternative 3, user capacity in the Gorge segment would be addressed through the establishment of a user capacity limit specific to the Gorge segment of the river corridor and set close to existing use levels. VERP monitoring would result in data on the condition of rare, threatened, and endangered species that would guide future management decisions. Management actions would be aimed at reducing the number of park users if the Gorge daily segment limits were exceeded. Potential management actions to reduce the number of people in the Gorge segment include eliminating formal and informal parking areas and requiring permits or reservations for picnic areas. Limits for all river corridor segments would be based closely on existing use and would prevent increased visitor-use effects to rare, threatened, and endangered species compared to Alternative 1. Therefore, implementation of daily segment limits that maintain existing use levels for the Gorge segment is expected to have a local, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The impacts of daily segment limits and VERP management actions would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor, beneficial impact. Implementation of a permit reservation system for picnic areas, increased enforcement of trail restrictions, and closure of areas would likely result in local, short- and long-term, minor to moderate, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Alternative 3 would implement daily segment limits and the VERP program, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 3 would have a local, short- and long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs in the Gorge segment.

Impacts in El Portal. Under Alternative 3, the river corridor boundary in El Portal would include habitat within a quarter-mile of the Merced River. The boundary includes the ORVs within a quarter-mile of the Merced River (e.g., Crane Creek and other tributaries to the Merced River and associated riverine habitats, habitat south of the Merced River) within the El Portal Administrative Site. Alternative 3 would designate low-intensity zoning (2B) for the majority of the area south of the river and higher intensity zoning (3C) in the vicinity of existing development areas and on other potentially developable sites. In addition, Alternative 3 would also designate several areas north of the river, such as Crane Creek and habitat to the east, as lower intensity zoning (2C).

Examples of how management zoning would affect rare, threatened, and endangered species and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Under its 2C zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, minor to moderate, beneficial effect on this ORV.
- Large portions of El Portal would be zoned 3C (e.g., the Trailer Village, Old El Portal), which could allow additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on rare, threatened, and endangered species. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to rare, threatened, and endangered species (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.
- The revised boundary would increase the area included in the river corridor from 193 acres to 853. Although 399 acres of habitat would be zoned 3C, allowing development of park operations and administration facilities, this development would be primarily concentrated in the vicinity of existing development. Designation of 454 acres of habitat zoned 2B and 2C (encompassing the majority of biological ORVs south of the river and in some areas north of the river that potentially support rare, threatened, and endangered species, such as Valley elderberry longhorn beetle, Tompkin's sedge, and Congdon's wooly sunflower) would limit

the development intensity in these regions, resulting in a local, long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

Under Alternative 3, user capacity in the El Portal segment of the river corridor would be addressed through the establishment of a user capacity limit specific to the El Portal segment of the river corridor and set close to the existing use level. The addition of VERP would result in data on the condition of rare, threatened, and endangered species that would guide future management decisions on El Portal. Management actions aimed at reducing the number of users would be implemented if the El Portal limit was exceeded. Potential management actions to reduce the number of people in the El Portal segment include eliminating formal informal parking areas or establishing additional rafting, kayaking, or fishing restrictions. Limits for all river corridor segments would be based closely on existing use, with some growth in employee housing if VERP monitoring indicates that rare, threatened, and endangered species and the biological ORVs would not be adversely affected. Therefore, implementation of daily segment limits that maintain existing use levels for the El Portal segment is expected to have a local, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The effects of VERP would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions are expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

The application of management zoning, the VERP program, and segment user capacity limits set close to existing use levels would protect and enhance rare, threatened, and endangered species and the biological ORVs in El Portal. The zoning in El Portal, in combination with an increased employee use limit, would allow for road repair as well as additional development of park administration facilities and employee housing, which could have short- and long-term, adverse effects on rare, threatened, and endangered species. The biological ORVs within a quarter-mile of the river within the El Portal Administrative Site would be located within the river corridor boundary; however, the criteria and considerations (including the Section 7 determination process) would protect the biological ORVs inside and outside the corridor boundary. Overall, the application of an increased river boundary and management zoning in combination with the VERP program and daily segment limits in El Portal would have a local, short- and long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

Impacts in Wawona. Under Alternative 3, user capacity in the Wawona segments would be addressed through the establishment of a user capacity limit specific to that segment of the river corridor and set close to existing use levels. Monitoring would result in specific management actions aimed at reducing the number of park users if the limit for the Wawona segments were exceeded. Potential management actions to reduce the number of people in the Wawona segments include instituting a day-use reservation system and reducing the number of commercial bus permits issued. Limits for the Wawona segments would be based closely on existing use, but would allow for some growth in employee housing if VERP monitoring indicates that rare, threatened, and endangered species and the biological ORVs would not be adversely affected. Therefore, implementation of daily segment limits that maintain existing use levels for

the Wawona segments is expected to have a local, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The impacts of daily segment limits and VERP management actions would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts to rare, threatened, and endangered species. Management actions are expected to reduce impacts by limiting visitors use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor, beneficial impact.

Overall, Alternative 3 would have a local, short- and long-term, minor, beneficial impact on rare, threatened, and endangered species and the biological ORVs in the Wawona segments.

Summary of Alternative 3 Impacts. Overall, limits on facilities through management zoning in El Portal in combination with VERP monitoring and management actions would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. Implementation of daily segment limits set close to existing use levels would allow for park management to limit visitation in specific segments of the river corridor. Although the annual maximum limit on park visitation under Alternative 3 is higher than current annual visitation, it is likely to be lower than under Alternative 1, resulting in minor, beneficial impacts to rare, threatened, and endangered species. The revised river corridor boundary at El Portal would include the biological ORVs within a quarter-mile of the river within the El Portal Administrative Site, resulting in a beneficial effect on rare, threatened, and endangered species. Alternative 3 would result in a local, short- and long-term, minor to moderate, beneficial impact on rare, threatened, and endangered species and the biological ORVs within the river corridor.

Compliance with existing park policies and federal regulations such as the Endangered Species Act would help ensure that the biological ORVs in each river segment are protected and enhanced.

Cumulative Impacts

Cumulative effects to rare, threatened, and endangered species from past, present, and foreseeable future actions would be the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 3, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor.

Impairment

Alternative 3 would have a local, short- and long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs of the Merced River corridor and therefore would not impair these resources for future generations.

Air Quality

Analysis

The following discussion provides an overview of the types of impacts to air quality that could occur within each segment of the Merced River corridor associated with Alternative 3.

In general, under Alternative 3 air quality in the river corridor would continue to be influenced by local sources within the park and by regional sources upwind of the park, and would continue to be subject to emissions trends similar to those described under Alternative 1.

The main differences between air quality conditions under Alternative 3 and those under Alternative 1 would relate to implementation of daily segment limits; implementation of a VERP program; and the construction or demolition activities and long-term impacts on air quality that could occur as a result of the change in management zoning resulting from adoption of a revised river corridor boundary in the El Portal segment of the river.

Impacts in Wilderness. Under Alternative 3, the daily segment limits for all Wilderness segments are set at the existing trailhead quota system limits. The use of trails in wilderness areas would continue consistent with conditions under Alternative 1.

Implementation of daily segment limits and the VERP program for wilderness areas would result in additional monitoring of indicators within Wilderness segments. The effects of the VERP program under Alternative 3 would be the same as described under Alternative 2. The impacts of management actions as a result of daily segment limits and VERP monitoring would vary depending on the action. Less restrictive management actions would be expected to have no effect on air quality in wilderness areas. The most restrictive measures could have beneficial effects by reducing the number of people recreating within the river corridor, as discussed under Alternative 2. In addition, the number of people could be limited by reducing trailhead quotas based on daily segment limit monitoring. These more restrictive measures could result in fewer people in wilderness areas and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions in other areas of the park. On this basis, management actions resulting Alternative 3 could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Overall, Wilderness segments would continue to be largely free of effects from local emissions sources (except for prescribed fires) but would be subject to regionwide emissions trends. Implementation of daily segment limits and the VERP program, combined with appropriate management actions based on monitoring results, would likely prevent user impacts from adversely affecting ORVs. With respect to ozone and particulate matter, daily segment limits and the VERP program would be expected to have a local, long-term, negligible, beneficial impact on air quality in Wilderness segments compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 3, air quality in Yosemite Valley would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in the Valley. Emissions from local stationary, area, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1.

In the short term, user levels and associated traffic in the Valley would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, user numbers and associated

vehicle use could increase, but such increases would likely be lower than under Alternative 1 because of daily segment limits and VERP.

Segment limits and the VERP program associated with Alternative 3 could have an indirect, beneficial impact on air quality in the Valley. Alternative 3 would include monitoring of daily segment limits that would most likely be exceeded only in the summer during periods of peak use (typically weekends and around holidays). If visitor numbers exceed the daily segment limits, park management would reduce visitor numbers through entrance station restrictions, day use permit requirements, or other means. Restrictions on the number of visitors in the Valley in the long term would likely result in fewer people in the Valley and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions.

The VERP program under Alternative 3 would be the same as described under Alternative 2. The applicable indicators would not directly address conditions specific to air quality; however, monitoring congestion on major park roads would indirectly address localized air quality in congested areas. If the standards set for level of congestion on major park roads or other standards and indicators were not met, management actions would be required to remedy the situation.

The impacts of management actions as a result of and VERP monitoring would vary depending on the action. Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing user activities or access in certain areas. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions such as site hardening, construction of new facilities, or removal of existing facilities could result in significant quantities of dust, and local visibility and PM-10 and PM-2.5 concentrations could be adversely affected. Without mitigation, dust raised by construction resulting from certain management actions could have a moderate but temporary effect in the immediate vicinity of individual sites. Implementation of Best Management Practices listed in Appendix B would reduce the temporary and localized air quality impacts from construction activities to a minor level and could result in localized, short-term, minor, adverse impacts on air quality. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 3 is expected to prevent visitor use from adversely affecting ORVs in the Valley. Certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of daily segment limits and the VERP program would likely have an overall local, long-term, negligible, beneficial impact on air quality in the Yosemite Valley segment compared to Alternative 1 because any increases in users and associated vehicle use would likely be lower.

Impacts in the Gorge. Like Alternative 1, under Alternative 3, areas zoned Untrailed (1A), Open Space and Undeveloped Open Space (2A, 2A+), and Discovery (2B) in the Gorge segment would continue to be free of effects from local emissions sources (with the exception of prescribed fires)

but would be subject to regionwide emissions trends. Areas zoned Day Use (2C), Attraction (2D) and Park Operations and Administration (3C) would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular emissions in those areas.

In the short term, visitor levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels. Over the long term, user numbers and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1 due to daily segment limits and VERP management actions.

Implementation of daily segment limits and the VERP program associated with Alternative 3 could have an indirect, beneficial impact on air quality in the Gorge segment. Park management would manage the number of visitors in the Gorge segment to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, management would reduce visitor numbers through limiting entrance station access or reducing parking availability. Restrictions on the number of visitors in the Gorge segment in the long term would likely result in fewer people in the Gorge and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions.

Implementation of VERP under Alternative 3 would be the same as described under Alternative 2. The indicators would not directly address conditions specific to air quality; however, monitoring of congestion on major park roads indirectly addresses localized air quality in congested areas. If the daily segment limit or standards set for congestion levels on major park roads or other indicators were not met, management actions would be implemented to remedy the situation.

The impacts of management actions as a result of VERP monitoring would vary depending on the action. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses, or the number of users recreating within the river corridor. These more restrictive measures could result in fewer people in the Gorge segment and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. Therefore, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality during construction, as discussed under the Yosemite Valley segment above. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 3 is expected to prevent visitor use from adversely affecting ORVs in the Gorge segment. Certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, daily segment limits and the VERP program would be expected to have an overall local, long-term, negligible, beneficial impact on air quality in the Gorge segment compared to Alternative 1 because any increases in visitor numbers and associated vehicle use would likely be lower.

Impacts in El Portal. Under Alternative 3, the boundary for the El Portal segment of the river corridor would be based on a quarter-mile boundary. The zoning in El Portal with this alternative would include low-intensity zoning (2B) for the majority of the area south of the river and higher development zoning (3C) in the vicinity of existing development areas and on other potentially developable sites. Several smaller areas south and north of the river would be zoned Day Use (2C). It is recognized that even in areas zoned for Park Operations and Administrative (3C) must still protect existing ORVs through site-specific design measures. Generally, development in the El Portal Administrative Site would be less flexible under Alternative 3 than under Alternative 1, where the boundary would be limited to the 100-year floodplain or River Protection Overlay, whichever is greater. The total acreage within the El Portal segment of the river corridor under Alternative 3 would be 853 acres, which would be four times greater than the boundary presented under Alternative 1.

The proposed boundary and zoning plan for the El Portal segment would likely result in some additional development or redevelopment within the areas zoned 3C and, to a lesser extent, in areas zoned 2C. Construction or redevelopment activities could result in substantial quantities of dust, and, as a result, local visibility and PM-10 and PM-2.5 concentrations could be adversely affected. Without mitigation, dust raised by construction resulting from the revised boundary in the El Portal segment could have a major but temporary effect in the immediate vicinity of individual sites. Implementation of mitigation measures would reduce the temporary and localized air quality impacts from construction activities to a minor level. On this basis, the construction associated with the management zoning under Alternative 3 could result in localized, short-term, minor, adverse impacts on air quality. However, overall, development in El Portal under Alternative 3 would be less intensive than under Alternative 1.

In the short term, user levels in El Portal would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, user numbers and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1 due to daily segment limits and VERP monitoring and management.

Implementation of daily segment limits and the VERP program associated with Alternative 3 could have an indirect beneficial impact on air quality in the El Portal area. Park management would manage the number of visitors in El Portal to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, park management would implement measures to limit visitor use to the adopted limit. Restrictions on the number of visitors in El Portal in the long term would likely result in fewer people in El Portal and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions. However, since the El Portal segment includes Highway 140, a primary entrance road to the park, reductions in vehicle trips through this segment would be nominal.

Implementation of VERP under Alternative 3 would be the same as described under Alternative 2. The applicable indicators would not directly address conditions specific to air quality; however, monitoring of congestion on major park roads indirectly addresses localized air quality in congested areas. If the standards set for level of congestion on major park roads or other standards and indicators were not met, management actions would be implemented to remedy the situation.

The impacts of management actions as a result of VERP monitoring would vary depending on the action. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles and buses, or the number of people recreating within the river corridor. These more restrictive measures could result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. Therefore, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality during construction, as discussed under the Yosemite Valley segment above. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 3 is expected to prevent visitor use from adversely affecting ORVs in the El Portal segment of the river corridor. Implementation of the quarter-mile river corridor boundary and certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction or redevelopment activities. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1 because the river corridor area would be increased. However, with respect to ozone and particulate matter, implementation of daily segment limits and the VERP program would be expected to have a local, long-term, negligible, beneficial impact on air quality in El Portal compared to Alternative 1 because any increases in user numbers and associated vehicle use would likely be lower.

Impacts in Wawona. Like Alternative 1, under Alternative 3 air quality in Wawona segments would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in Wawona. Emissions from local stationary, area, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1.

In the short term, user levels and associated traffic in Wawona would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, user numbers and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1 as a result of daily segment limits and VERP monitoring and management.

Implementation of daily segment limits and the VERP program under Alternative 3 could have an indirect, beneficial impact on air quality in Wawona. Park management would manage the number of visitors in Wawona to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, park management would implement measures to limit visitor use to the adopted limit. Restrictions on the number of visitors in Wawona in the long term would likely result in fewer people in Wawona and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions.

The VERP program under Alternative 3 would be the same as described under Alternative 2. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could result in fewer users, fewer vehicle trips

(and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions, which could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality during construction. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 3 is expected to prevent visitor use from adversely affecting ORVs in Wawona. Certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of daily segment limits and the VERP program would likely have a local, long-term, negligible, beneficial impact on air quality in Wawona compared to Alternative 1 because any increases in user numbers and associated vehicle use would likely be lower.

Summary of Alternative 3 Impacts. Overall, Alternative 3 is expected to prevent visitor use from adversely affecting ORVs. Certain VERP management actions in response to daily segment limits and VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1. Overall, Alternative 3 would be expected to have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1.

Cumulative Impacts

Cumulative effects to air quality under Alternative 3 would be the same as those identified and described under Alternative 1.

Based on the revised river corridor boundary in El Portal and VERP management actions, Alternative 3 could contribute to the cumulative number of construction sites in and near the corridor. In most instances, construction projects under Alternative 3 would not overlap in time and space with cumulative construction projects; therefore, the local, short-term, major, adverse effects on air quality due to construction activities could be reduced to a minor intensity with implementation of Best Management Practices. Over the long term, with respect to ozone, conditions in the river corridor would be determined almost entirely by regional emissions trends. The local, long-term, negligible, beneficial impact on air quality within the Merced River corridor under Alternative 3 (relative to Alternative 1) would have little effect on overall ozone levels in Yosemite National Park. As discussed under Alternative 1, the long-term, regional effect would be moderate and beneficial, primarily due to the emissions reductions expected to occur with ongoing state and federal mobile-source control programs. With respect to particulate matter, conditions in the river corridor would be determined by both regional sources and local sources, and the relative influence of these two types of sources would vary on a daily and seasonal basis. Given the opposing emissions trends between primary and secondary sources of particulate matter and the varying relative contributions of regional and local emissions sources, it would be speculative to conclude that the combined effect of cumulative actions and the benefits

of Alternative 3 (compared to Alternative 1) would be beneficial or adverse; however, the opposing emissions trends would tend to diminish the magnitude of the effect, regardless of whether the effect would be beneficial or adverse.

Impairment

Management actions in response to daily segment limits and VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1. Overall, Alternative 3 would likely have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1 because any increases in visitor numbers and associated vehicle would likely be lower. Therefore, Alternative 3 would not impair air quality in the park.

Noise

Analysis

The following discussion provides an overview of the types of impacts to the ambient noise environment that could occur within each segment of the Merced River corridor associated with Alternative 3.

Under Alternative 3, the acoustical environment in wilderness areas would generally continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in Yosemite National Park would follow trends similar to those described for Alternative 1.

The main differences between noise conditions under Alternative 3 and those under Alternative 1 would relate to the following issues: implementation of a VERP program with daily segment limits; day-use limits in Little Yosemite Valley; and the construction or demolition activities and long-term impacts on the noise environment that could occur as a result of the change in management zoning resulting from adoption of the revised corridor boundary in the El Portal segment of the river.

Impacts in Wilderness. The enjoyment of natural river sounds is integrated into the recreation ORV in designated wilderness areas. That aspect would continue to be considered for protection and enhancement in wilderness areas.

Under Alternative 3, the daily segment limits for all Wilderness segments would be set at the existing wilderness trailhead quotas, and the use of trails in wilderness areas would continue consistent with existing conditions and conditions under Alternative 1.

Implementation of the VERP program with daily segment limits for the wilderness areas would result in additional monitoring of indicators within wilderness areas. The VERP program under Alternative 3 would be the same as described for Alternative 2. Management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the enjoyment of natural river sounds and the broader ambient noise environment. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use,

could have beneficial effects by reducing the number of people recreating within the river corridor, and the River Protection Overlay in particular, and the number of encounters with other parties and the number of people at one time at selected sites in wilderness areas. These more restrictive measures would result in local, short- and long-term, negligible to minor, beneficial impacts on the enjoyment of natural river sounds and the broader ambient noise environment.

Implementing a specific day-use limit in Little Yosemite Valley would help to minimize overall noise levels in this area, and provide a localized long-term minor beneficial impact to noise levels in this segment, compared to Alternative 1.

Overall, the acoustical environment in wilderness areas would, however, continue to experience intrusive noise generated by high-altitude aircraft overflights. In some wilderness areas, such overflights would continue to be the principal source of adverse noise impacts. Noise from high-altitude aircraft overflights may worsen over the long term, if the national trend in the number of aircraft flights continues to increase. The daily segment limits and VERP program with daily segment limits would not address conditions related to aircraft overflights.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in wilderness areas as a result of the park's existing trailhead quota system, implementation of the daily segment limit and VERP program would be expected to have a local, long-term, negligible to minor, beneficial impact on the natural enjoyment of river sounds portion of the recreation ORV and the broader ambient noise environment in wilderness areas relative to Alternative 1.

Impacts in Yosemite Valley. As under Alternative 1, under Alternative 3 the acoustical environment in Yosemite Valley would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. Under Alternative 3, the ambient noise environment in wilderness and nonwilderness areas of the Valley would follow trends similar to those described under Alternative 1.

In the short term, visitor levels and associated traffic in the Valley would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 as a result of daily segment limits and the VERP program.

Implementation of the VERP program with daily segment limits could have an indirect, beneficial impact on the ambient noise environment in the Valley. Park management would manage the number of visitors in the Valley to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, management would reduce visitor numbers through entrance station restrictions, day-use permit requirements, or other means. Restrictions on the number of visitors in the Valley in the long term would likely result in fewer people in the Valley and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

The VERP program under Alternative 3 would be the same as described under Alternative 2. Management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial noise effects by reducing the number of vehicles or buses, or the number of people recreating with the river corridor. These more restrictive measures would also

result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions resulting from daily segment limits and VERP monitoring could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley.

Conversely, implementation of management actions that result in site hardening, construction of new facilities or removal of existing facilities could result in construction or demolition activities that could generate substantial amounts of noise during the temporary construction period. At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, such as the number and types of equipment in operation on a given day, their usage rates, the level of background noise in the area, and the distance between sensitive uses and the construction site. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short-term, moderate, and adverse. Implementation of mitigation measures as described in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, these types of management actions could result in localized, short-term, minor, adverse impacts on the ambient noise environment related to their construction.

Overall, Alternative 3 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of the VERP program with daily segment limits would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in the Gorge. As under Alternative 1, under Alternative 3, the acoustical environment in areas zoned 1A, 2A, 2A+, and 2B would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights and distant roadway noise. The acoustical environment in areas zoned 2C, 2D and 3C would continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in the Gorge segment of the river corridor would follow similar trends as described under Alternative 1. Areas zoned 2C, 2D and 3C would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise in those areas.

In the short term, visitor levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than for Alternative 1 due to daily segment limits and the VERP program.

Implementation of the VERP program with daily segment limits could have an indirect beneficial impact on the ambient noise environment in the Gorge segment. Park management would manage the number of visitors in the Gorge segment to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, management would reduce visitor numbers through limiting entrance station access or reducing parking availability. Restrictions on the number of visitors in the Gorge segment in the long term would likely result in fewer people in the

gorge and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

The VERP program under Alternative 3 would be the same as described under Alternative 2. In general, educational measures would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses, or the number of people recreating within the river corridor. These more restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Gorge segment.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 3 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. Overall, implementation of daily segment limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the gorge relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in El Portal. Under Alternative 3, the boundary for the El Portal segment of the river corridor in this alternative would be based upon a quarter-mile boundary. The zoning in El Portal within this alternative would call for low-intensity zoning (zone 2B) for the majority of the area south of the river and higher development zoning (3C) in the vicinity of existing development areas and on other potentially developable sites. Several smaller areas south and north of the river would be zoned for day use (2C). Generally, development in the El Portal area would be less flexible under Alternative 3 than under Alternative 1, where the boundary would be limited to the 100-year floodplain or River Protection Overlay, whichever is greater. The total acreage within the El Portal segment of the river corridor under Alternative 3 would be 853 acres, which would be four times greater than the boundary presented under Alternative 1.

The proposed boundary and zoning for the El Portal segment would likely result in some additional development or redevelopment within the areas zoned 3C, and to a lesser extent in areas zoned 2C. The ambient noise environment in these zones could be influenced by noise from construction, demolition or redevelopment activities. At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, as described under the Yosemite Valley segment above. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short-term, moderate, and adverse. Implementation of mitigation measures as described in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, the construction associated with the management

zoning under Alternative 3 could result in localized, short-term, minor, adverse impacts on the ambient noise environment. However, overall, development in El Portal under Alternative 3 would be less intensive than under Alternative 1.

The 2C and 3C zoning would allow for concentrated day use and development in the El Portal Administrative Site area, respectively. In the short term, visitor levels in El Portal would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to daily segment limits and VERP monitoring and management. Development and increased day use opportunities could increase the number of vehicle-miles traveled within the El Portal segment of the river corridor. Development in this area could cause a local, long-term, minor, adverse effect on the ambient noise environment due to the concentration of vehicular noise and human activity in these areas.

Implementation of the VERP program with daily segment limits could have an indirect beneficial impact on the ambient noise environment in the El Portal area. Park management would manage the number of visitors in El Portal to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, management would implement measures to limit visitor use to the adopted limit. Restrictions on the number of visitors in El Portal in the long term would likely result in fewer people in El Portal and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels. However, since the El Portal segment includes Highway 140, a primary entrance road to the park, reductions in vehicle trips through the segment would be nominal.

The VERP program under Alternative 3 would be the same as described under Alternative 2. Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas, as discussed in previous sections. In general, management actions such as visitor educational measures would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions or daily segment limits could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the El Portal area.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 3 would be expected to prevent visitor use from adversely affecting ORVs. Implementation of the quarter-mile boundary and certain management actions implemented in response to VERP monitoring could result in localized short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction or redevelopment activities. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1 as the corridor area would be increased. Overall, implementation of daily segment limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the El Portal area relative to Alternative 1, since any increases in visitor numbers, associated vehicle use, and corresponding noise levels would likely be lower.

Impacts in Wawona. As under Alternative 1, under Alternative 3 the acoustical environment in Wawona would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. Under Alternative 3, the ambient noise environment in Wawona would follow trends similar to those described for Alternative 1.

In the short term, visitor levels and associated traffic in Wawona would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 as a result of daily segment limits and the VERP program.

Implementation of the VERP program with daily segment limits under Alternative 3 could have an indirect beneficial impact on the ambient noise environment in Wawona. Park management would manage the number of visitors in Wawona to ensure that the daily segment limits are not exceeded. If visitor numbers exceed the limits, management would implement measures to limit visitor use to the adopted limit. Restrictions on the number of visitors in Wawona in the long term would likely result in fewer people in Wawona and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

The VERP program with daily segment limits under Alternative 3 would be the same as described under Alternative 2. In general, management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles, buses, or the number of people recreating within the river corridor. These more restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 3 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of the VERP program with daily segment limits would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Summary of Alternative 3 Impacts. As under Alternative 1, the acoustical environment in wilderness areas would not be affected by Alternative 3, but would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would continue to be shaped by human-caused sources of noise and by natural sources of sound.

Overall, Alternative 3 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1 as the corridor area would be increased. Less intensive development could have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the El Portal area.

Overall, implementation of Alternative 3 would be expected to have a local, long-term, negligible, beneficial impact on ambient noise levels in nonwilderness areas within the Merced River corridor relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower due to daily segment limits and the VERP program.

Cumulative Impacts

Cumulative effects to the ambient noise environment are described under Alternative 1.

Based on the revised river corridor in El Portal and implementation of certain management actions that could be implemented in response to VERP monitoring, Alternative 3 could contribute to the cumulative number of construction sites in and near the corridor; in most instances, construction projects undertaken as part of Alternative 3 would not overlap in time and space with cumulative construction projects, and thus the local, short-term adverse effects on noise due to construction activities could be reduced to a moderate intensity with implementation of best management practices. Over the long term, in wilderness areas, noise impacts in the corridor would be determined almost entirely by cumulative trends in air travel rather than by in-park noise sources under Alternative 3; as discussed under Alternative 1, if the national trend in air travel continues to increase, it could result in a local, long-term, minor, adverse effect on the ambient noise environment. In nonwilderness areas, the cumulative actions that would tend to reduce motor vehicle trips would result in a local, long-term, moderate, adverse effect on noise levels in the immediate vicinities of such facilities due to the concentration of vehicular activity, but could result in a local, long-term, moderate, beneficial effect in the eastern portion of the Valley due to reduced vehicle trips and associated noise, and related to the type of bus technology used for transit purposes.

Taken as a whole, Alternative 3, with implementation of the VERP program with daily segment limits and its more restrictive development scheme in the El Portal area, would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1.

Impairment

Management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor to moderate (with implementation of best management practices), adverse impacts to the noise environment and the soundscapes in the vicinities of construction or demolition projects. However, development in El Portal under Alternative 3 would be less intensive than under Alternative 1. Overall, Alternative 3 with implementation of the VERP program with daily segment limits and its more restrictive development scheme in the El Portal

area would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower due to daily segment limits and VERP monitoring and management. Therefore, implementation of Alternative 3 would not impair park soundscapes.

Cultural Resources

Archeological Resources

Analysis

The following discussion provides an overview of the types of impacts to archeological resources that could occur within each segment of the Merced River corridor from implementation of the park's user capacity management program with daily segment limits and a VERP program. Effects on cultural resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas with known archaeological resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Archeological resources include historic and prehistoric resources related to occupation and homesteading, hunting, travel and trade, the U.S. Cavalry, and wilderness tourism.

User capacity within wilderness areas of Yosemite National Park is addressed through trailhead limits and monitoring of wilderness resource conditions. Limits for Wilderness segments would be set at the existing trailhead quota numbers. Implementation of the VERP program for the wilderness areas would result in additional monitoring of indicators within wilderness areas. VERP indicators to be monitored in wilderness zones are listed in table II-5.

Implementation of a day-use limit to limit the number of people in Little Yosemite Valley during periods of peak use would have a long-term, negligible to minor, beneficial impact on archeological resources due to a decrease in visitor-related damages such as erosion, trampling, and surface collection.

Since the daily segment limits for the wilderness areas would be set at the current trailhead quota system levels, no additional management actions would be needed to implement the daily segment limits. Implementation of the daily segment limits in the wilderness areas would have no effect on cultural resources as compared to the No Action Alternative.

Under Alternative 3, the effects of the VERP program would be similar to those discussed under Alternative 2. The impacts of the management actions implemented as a result of VERP monitoring vary depending on the action taken. Education efforts are expected to result in local, short- and long-term, minor, beneficial impacts on archeological resources. More restrictive

measures would likely have local, long-term, moderate, beneficial effects on the archeological resources due to a potential decrease in degradation of archeological deposits.

Implementing daily segment limits would not affect archeological resources in the wilderness, as compared to the No Action Alternative. Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead limits in response to VERP monitoring and Lower Yosemite Valley day-use limits is also expected to have a local, long-term, moderate, beneficial impact on archeological resources due to a potential reduction in visitor impacts to these resources.

Impacts in Yosemite Valley. Archeological resources in Yosemite Valley include several historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Limits for the Yosemite Valley segment are set close to existing levels of use. The park would manage the number of visitors in the Valley to ensure that the daily segment limits are not exceeded. If the limits are exceeded, management would take actions to reduce visitor numbers. Management actions could include limiting commercial and/or regional transit bus numbers, requiring commercial bus reservations, instituting a day-use reservation program, rerouting visitors trying to enter the Valley once the limit is reached, or instituting entrance station closures when the limit is reached.

The results of these management actions would depend upon the management action taken. Since all of the management actions would be aimed at lowering the number of people accessing Yosemite Valley, the local, long-term impact on archeological resources within Yosemite Valley would be minor to major and beneficial, because this measure is likely to result in lower levels of visitors in the Valley in the long term, and would therefore decrease traffic and crowding on and around archeological resources compared to the No Action Alternative.

In addition to managing visitor numbers within the Valley, additional management actions could be implemented under VERP. The effects of VERP under Alternative 3 would be the same as those discussed under Alternative 2. Educational measures would result in local, short- and long-term, negligible to minor, beneficial effects on archeological resources. More restrictive measures would benefit archeological resources by reducing opportunities for site degradation. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site-hardening activities could result in adverse effects on archeological resources if proposed facilities damage deposits or increase the likelihood of visitor-related damage. These actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement. The effects of these actions on archeological resources would likely be local, long term, negligible to minor, and adverse.

Overall, implementation of the proposed user capacity program with daily segment limits and VERP monitoring, coupled with the implementation of appropriate management actions based on monitoring results, would have a local, long-term, moderate, beneficial impact on archeological resources, except for site hardening activities, which have the potential to cause a local, long-term, minor, adverse impact on archeological resources.

Impacts in the Gorge. Archeological resources in the Gorge segment include historic and prehistoric sites related to occupation, the Civilian Conservation Corps, early roads and trails, road development, and early tourism.

The daily segment limits for the Gorge are based on current use assumptions and available parking. The park would manage the number of visitors in the Gorge to ensure that the daily segment limits are not exceeded. If limits are exceeded, management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, management could reduce parking in the Gorge to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park, or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge.

The results of these management actions would depend upon the management action taken. Implementation of daily segment limits would result in negligible effects in the short term, since the limit would be set at existing use levels. In the long term, the level of use would likely be lower than under the No Action Alternative. Since current use levels are low, visitor-related damage to archeological resources (such as trampling, erosion, or surface collection) is also low. This further reduction of use would provide a local, long-term, minor, benefit to archeological resources in the Gorge.

In addition to managing visitor numbers within the Gorge, additional management actions would be implemented if monitoring of the VERP indicators shows that standards for these indicators are not being met. The effects of VERP under Alternative 3 would be the same as those described under Alternative 2. Educational measures are expected to result in local, short and long term, negligible to minor, beneficial effects, as described above. More restrictive measures would be expected to provide for a less crowded and more natural environment. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site hardening activities could result in some adverse effects on archeological resources, but would be limited to areas designated for higher levels of development and use—Attraction (2D) and Park Operations and Administration (3C). These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement. The effects would likely be local, long term, negligible to minor, and adverse.

Overall, Alternative 3, would have a local, long-term, moderate, beneficial impact on archeological resources in the Gorge segment, except for site-hardening activities, which have the potential to cause a local, long-term, negligible to minor, adverse impact on archeological resources.

Impacts in El Portal. Archeological resources in El Portal consist of some of the oldest prehistoric sites within the Merced River corridor. Prehistoric and historic archeological sites and districts in El Portal include examples of villages, homesteads, early tourism, as well as the mining, railroad, and timber industries.

The boundary for the El Portal segment in Alternative 3 was based upon a quarter-mile boundary. The zoning proposed for the El Portal corridor under Alternative 3 calls for Park Operations and Administration (3C) north of the river and in existing developed areas south of the river, with a small amount of Day Use (2C). The majority of the undeveloped areas south of the river would be

zoned as low-intensity Discovery (2B). The few developed areas south of the river would be zoned 3C or 2C. An important portion of one archeology site would be zoned 2C.

The proposed Alternative 3 boundary and zoning designations for the El Portal segment is likely to result in some additional development or redevelopment within the 3C areas, but the 2B and 2C zoning along much of the corridor and south of the river would substantially limit new development in El Portal. This increased development north of the river could result in an adverse effect to archeological resources. However, the effect of new development on archeological resources within the segment would vary depending on the nature of the development and its proximity to archeological sites. All development would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement.

New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan, as well as the current park management policies. These management policies guide how actions could be implemented in order to minimize adverse effects to cultural resources. ORVs must be protected on a segmentwide basis regardless of the zoning designation or whether or not the resources are in or outside of the river corridor boundary. Therefore, the adverse effect of new development on archeological resources within the segment would likely be local, long term, and negligible to minor.

The Discovery (2B) zoning south of the river is characterized by quiet and natural areas. Only limited development would be appropriate in this zone. Because this intended use is similar to the current use of the area, no impacts are likely to occur compared to the No Action Alternative.

The application of the revised El Portal river corridor boundary under Alternative 3 is expected to have a local, long-term, minor to moderate, beneficial effect on archeological resources in the El Portal segment compared to Alternative 1 due to the increased area included within the corridor and zoning restrictions.

Implementation of daily segment limits for El Portal is expected to have negligible effects on archeological resources in the short term, since visitor use of this area is limited. Future growth in the use of this area could require implementation of measures to restrict visitor use to the adopted limits, removing parking areas or closing certain areas. Implementation of these types of measures to restrict or reduce use would result in local, long-term, negligible, beneficial effects on archeological resources as compared to the No Action Alternative.

Implementation of a VERP program in El Portal under Alternative 3 would result in the same effects described under Alternative 2. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures would likely provide for a less crowded and more natural environment. These measures could result in short-term or long-term, moderate to major, beneficial impacts to archeological resources. Site hardening activities could result in some adverse effects on archeological resources. These actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement. The effects would likely be local, long term, negligible to minor, and adverse.

Short- and long-term, moderate, adverse effects to archeological resources could occur in areas zoned Park Operations and Administration (3C) as the result of future actions that could be

implemented under the this zoning category (e.g., new employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 3 because these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. The implementation of daily segment limits and a VERP program could have long-term, moderate, beneficial impacts on archeological resources and local, long-term, negligible, adverse impacts, depending on the management action taken.

Impacts in Wawona. Archeological resources in Wawona include historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Implementation of daily segment limits for Wawona are expected to have negligible effects on archeological resources in the short term. If future visitor use levels in Wawona reached the daily segment limit, management would take actions to restrict or reduce visitor levels to meet the proposed limits. Visitor use could be reduced by reducing parking, requiring reservations, or limiting overall numbers of visitors into the area through the South Entrance Station. Due to the decreased likelihood of visitor impacts on archeological deposits, these measures could have local, long-term, minor to moderate, benefits on archeological resources as compared to the No Action Alternative.

Implementation of the VERP program throughout the Wawona segment would have the same effects as described under Alternative 2. Educational efforts would be expected to result in local, long-term, negligible to minor, benefits to archeological resources. More restrictive measures could have short-term or long-term, moderate to major, beneficial impacts to archeological resources. Site hardening activities could result in adverse effects on archeological resources if the proposed facilities would damage deposits or increase the likelihood of visitor-related damage. Overall, the effects of new development would likely be local, long-term, negligible to minor, and adverse.

Summary of Alternative 3 Impacts. Compliance with existing park policies and federal laws (such as the National Historic Preservation Act and VERP program with daily segment limits) would help ensure that the archeological component of the cultural ORV in each river segment is protected and enhanced.

Under Alternative 3, overall visitor numbers in the future would likely be lower than under Alternative 1. Segment limits and management actions taken to protect ORVs and other resources would result in less congestion and crowding and less likelihood of visitor-related damage to cultural resources. If restrictive management actions are required to achieve these conditions, there would be moderate benefits to archeological resources. The larger river corridor boundary and management zones in El Portal under Alternative 3 would reduce development potential in El Portal and result in a minor, beneficial effect on archeological resources.

Cumulative Impacts

Cumulative effects to archeological resources for past, present, and future projects would be the same as those identified and described under Alternative 1.

Past, present, and reasonably foreseeable future cumulative actions could have long-term, beneficial impacts and long-term, adverse impacts on archeological resources of the cultural

ORVs within the Merced River corridor. Overall, these cumulative actions in combination with Alternative 3 could have a net long-term, moderate, adverse impact on archeological resources with the Merced River corridor.

Impairment

Because adverse impacts to archeological resources are negligible or minor, Alternative 3 is not expected to impair the park's archeological resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Traditional Cultural Resources

Analysis

The following discussion provides an overview of the types of impacts to traditional cultural resources that could occur within each segment of the Merced River corridor under Alternative 3 from implementation of the park's user capacity management program with daily segment limits and a VERP program. Effects on cultural resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas with known traditional cultural resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Traditional cultural resources in the Wilderness segments include continuing uses such as the travel/trade routes connecting the east and west slopes of the Sierra Nevada range.

User capacity within wilderness areas of Yosemite National Park is addressed through trailhead quotas and monitoring of wilderness resource conditions. Limits for Wilderness segments would be set at the existing trailhead quota system numbers. Implementation of the VERP program for the wilderness areas would result in additional monitoring of indicators within wilderness areas, as described under Alternative 2.

Since the daily segment limits for the wilderness areas would be set at the current trailhead quota system levels, no additional management actions would need to be taken to implement the daily segment limits. Implementation of the daily segment limits in the wilderness areas would have no

effect on cultural resources compared to the No Action Alternative. Implementation of a day-use limit to limit the number of people in Little Yosemite Valley during periods of peak use would have no effect on traditional cultural resources.

The impacts of the management actions implemented as a result of VERP would vary depending on the action taken. Management actions related to visitor education are expected to reduce impacts to traditional cultural resources by encouraging more dispersion of visitors within wilderness areas and changing visitor behaviors by providing information on activities that cause adverse impacts. Educational efforts would likely result in local, short and long-term, negligible, beneficial impacts on traditional cultural resources. More restrictive measures, such as reducing trailhead quotas, restricting stock use, and limiting day-use access in heavily used areas to users with permits or guided groups, would be expected to have local, long-term, negligible, beneficial effects on traditional cultural resources.

Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quotas in response to VERP monitoring would likely have a local, long-term, negligible, adverse impact on traditional cultural resources due to a potential reduction in American Indian access to these resources.

Overall, implementing daily segment limits and a day-use limit in Lower Yosemite Valley would not affect traditional cultural resources in the wilderness compared to the No Action Alternative. Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quotas in response to VERP monitoring area likely to have a local, long-term, negligible, beneficial impact on traditional cultural resources due to a potential reduction in visitor impacts to these resources.

Impacts in Yosemite Valley. Traditional cultural resources in Yosemite Valley encompass many natural and cultural features throughout the Valley that are traditionally valued by local American Indian groups. These resources include, gathering areas, religious sites, village sites, and cemeteries.

Limits for the Yosemite Valley segment would be set close to existing levels of use. The park would manage the number of visitors in the Valley to ensure that the daily segment limits are not exceeded. If the limits are exceeded, management would take actions to reduce visitor numbers. Management actions could include limiting commercial and/or regional transit bus numbers, requiring commercial bus reservations, instituting a day-use reservation program, rerouting visitors trying to enter the Valley once the limit is reached, or instituting entrance station closures when the limit is reached.

The results of these management actions would depend upon the management action taken. Since all of the management actions would be aimed at lowering the number of people accessing Yosemite Valley, the impact would be local, long-term, minor to moderate, and beneficial, because this measure is likely to lower visitor levels in the Valley in the long term, and would therefore decrease traffic and crowding on and around traditional cultural resources as compared to the No Action Alternative. American Indian access to these resources would continue to be guided by the park's agreements with the tribes such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these actions could result in short-

term or long-term, moderate to major beneficial impacts on traditional cultural resources through resource protection.

In addition to managing visitor numbers within the Valley, additional management actions could be implemented under VERP. The effects of management actions taken within the Valley would vary by the action taken. Educational measures would be expected to result in improvements to the natural and cultural setting, and therefore would be expected to result in local, short and long term, negligible to minor, beneficial effects on traditional cultural resources. More restrictive measures would benefit the traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the tribes. Therefore, these measures could result in short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Overall, implementation of the proposed user capacity program with daily segment limits and VERP under Alternative 3 is expected to have a moderate benefit to traditional cultural resources. Where these goals are achieved through education, the effect on traditional cultural resources is expected to be long term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions on visitor transportation options, types of activities, and levels of use could have long- term, moderate to major, beneficial impacts or minor, adverse impacts to traditional cultural resources.

Impacts in the Gorge. Traditional cultural resources in the Gorge segment include gathering areas and villages.

Under Alternative 3, limits for the Gorge segment would be based on current use assumptions and available parking. The park would manage the number of visitors in the Gorge to ensure that the daily segment limits are not exceeded. If limits are exceeded, management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, management could reduce parking in the Gorge to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park, or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge.

The results of these management actions would depend upon the action taken. Implementation of the daily segment limits would result in negligible effects in the short term, since the limit would be set at existing use levels. In the long term, the level of use would likely be lower than under the No Action Alternative. Since current use levels are low, visitor-related damage to traditional cultural resources (such as trampling, erosion, or surface collection) is also low. This further reduction of use would provide a local, long-term, minor to moderate, benefit to traditional cultural resources in the Gorge.

In addition to managing visitor numbers within the Gorge, management actions could be implemented under VERP. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation, such as trampling and erosion. American Indian access to these resources would continue to be guided by the park's agreements with the tribes. Therefore, these measures could result in local, short-term

or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Overall, implementation of the proposed user capacity program with daily segment limits and a VERP program is expected to have a moderate benefit to traditional cultural resources. Where these goals are achieved through education, the effect on traditional cultural resources is expected to be long-term, negligible, and beneficial. Management actions that result in long-term, broad based restrictions on visitor transportation options, types of activities, and levels of use could have long-term, moderate to major, beneficial impacts or minor, adverse impacts to traditional cultural resources.

Impacts in El Portal. Traditional cultural resources in El Portal consist of, but are not limited to, gathering areas, cemeteries, geological features of traditional spiritual importance, and prehistoric and historic village sites. Like Yosemite Valley, contemporary associated tribes consider all of El Portal to be a traditional use area.

The boundary for the El Portal segment of the river in Alternative 3 would be based on a quarter-mile boundary. The zoning for the El Portal corridor under this alternative calls for Park Operations and Administration (3C) north of the river, and low-intensity Discovery (2B) zoning for the majority of the undeveloped areas south of the river. A few small pockets of land north and south of the river would be zoned Day Use (2C).

The proposed boundary and zoning designations for the El Portal segment would allow additional development or redevelopment within the areas zoned 3C. But the areas zoned 2B and 2C along much or the corridor and south of the river would substantially limits new development in El Portal. Increased development north of the river could result in an adverse effect. However, the effect of new development on traditional cultural resources would vary depending on the nature of the development and its proximity to traditional cultural resources. If the construction of proposed new facilities temporarily leads employees or visitors closer to a traditional cultural resource, the effect could be local, short term, minor, and adverse. If the facilities were to increase visitor or employee exposure to traditional cultural resources, the effect could be local, long term, minor, and adverse. Conversely, if the proposed new facilities avoid traditional cultural resources and reduce visitor/employee-related damage to these resources, the Park Operations and Administration (3C) management zoning could have a local, long-term, negligible to minor beneficial impact.

The Discovery (2B) zoning south of the river is characterized by quiet and natural areas. Only limited development would be appropriate in this zone. Because this intended use is similar to the current use of the area, no impacts are likely to occur under Alternative 3 compared to the No Action Alternative.

The Day Use (2C) zoning south and north of the river allows for development of trails, restrooms, and picnic areas. This increased development south of the river could result in a short-term or long-term, minor to moderate, adverse impact on traditional cultural resources. If the construction of new development temporarily leads visitors closer to traditional cultural resources, the effect could be local, short term, minor, and adverse. If the development were to increase visitor exposure to traditional cultural resources, the effect could be local, long term, minor, and adverse.

All development would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and in consultation with associate American Indian groups. New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan, as well as current park management policies. These management policies guide how actions could be implemented to minimize adverse effects to cultural designations or whether the resources are in or outside of the river corridor boundary. Therefore, the adverse effect of new development on traditional cultural resources within the El Portal segment would likely be local, long term, and negligible to minor.

In general, the river corridor and management zoning under Alternative 3 would have a local, long-term, minor to moderate, beneficial effect to traditional cultural resources when compared to the No Action Alternative.

Implementation of VERP within the El Portal segment would have the same effects as those described under Alternative 2. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation such as trampling and erosion. American Indian access to these resources would continue to be guided by the park's agreements with the tribes such as the Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore, these measures could result in local, short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection

Overall, local, short- and long-term, negligible to minor, adverse impacts to traditional cultural resources and local, short- and long-term, moderate, beneficial impacts on traditional cultural resources could occur as a result of future actions that could be implemented under the proposed zoning. However, adverse effects would be reduced in intensity under Alternative 3 by the application of zoning and other Merced River Plan elements within the larger, revised river corridor boundary (as compared to Alternative 1). The implementation of daily segment limits and a VERP program could have long-term, moderate, beneficial impacts.

Impacts in Wawona. Traditional cultural resources in Wawona include gathering areas, cemeteries, and village sites.

Implementation of daily segment limits for the Wawona segment is expected to have negligible effects on traditional cultural resources in the short term. If future visitor use levels in Wawona reached the daily segment limits, management would take actions to restrict or reduce visitor levels to meet the proposed limits. Visitor use could be reduced by reducing parking, requiring reservations, or limiting overall numbers of visitors into the area through the south entrance station. Due to the decreased likelihood of visitor impacts (such as trampling and erosion) on traditional cultural resources, these measures could have local, long-term, negligible to minor, benefits on traditional cultural resources as compared to the No Action Alternative.

Implementation of the VERP program under Alternative 3 would be the same as described under Alternative 2. Educational efforts are expected to result in local, long-term, negligible to minor, benefits to traditional cultural resources. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation, such as trampling and

erosion. American Indian access to these resources would continue to be guided by the park's agreements with the tribes. Therefore, these measures could result in local, short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Summary of Alternative 3 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement; the 1997 Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities; and federal laws such as the National Historic Preservation Act, American Indian Religious Freedom Act, and Native American Graves Protection and Repatriation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Under Alternative 3, overall visitor numbers in the future would likely be lower than under Alternative 1. Segment limits and management actions taken to protect ORVs and other resources would result in less congestion and crowding and less likelihood of visitor-related damage to cultural resources. Improvements to the natural setting and reduced crowding and congestion are expected to provide benefits to traditional cultural resources within the corridor. If restrictive management actions are required to achieve these natural and social conditions, there would be moderate benefits to traditional cultural resources related to an improved natural environment and a minor, adverse effect due to a decrease in the ability for American Indians to access these resources. The larger river corridor boundary and management zones in El Portal under Alternative 3 would result in less development potential in El Portal and would likely have a minor beneficial effect on traditional cultural resources.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1.

Past, present, and reasonably foreseeable future cumulative actions could have long-term, beneficial impacts on traditional cultural resources and the traditional cultural resource component of the cultural ORV within the Merced River Corridor. Overall these cumulative actions in combination with Alternative 3 could have a net long-term, minor, beneficial impact on traditional cultural resources with the Merced River corridor. They could also result in a long-term, minor, adverse impact due to increased development and visitor-related damage.

Impairment

Because impacts to traditional cultural resources are primarily beneficial, Alternative 3 is not expected to impair the park's traditional cultural resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed

alternative would undergo environmental review to determine potential effects on historic properties.

Historic Sites, Structures, and Landscapes

Analysis

The following discussion provides an overview of the types of impacts to historical sites, structures, and landscapes that could occur within each segment of the Merced River corridor under Alternative 3 from implementation of daily segment limits and a VERP program. Effects on these resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Historic sites, structures, and landscapes in the wilderness include the Merced Lake High Sierra Camp, John Muir Trail, remains of the original Yosemite Grant boundary fence, U.S. Cavalry trails, and sites associated with early stock grazing.

User capacity within wilderness areas of Yosemite National Park is addressed through a trailhead quota system and monitoring of wilderness resource conditions. Limits for Wilderness segments would be set at the existing trailhead quota system numbers. Implementation of the VERP program for the wilderness areas under Alternative 3 would be the same as described under Alternative 2.

Since the daily segment limits for the wilderness areas would be set at the current trailhead quota system levels, no additional management actions would be needed to implement the limits. Implementation of the daily segment limits in the wilderness areas would have no effect on cultural resources compared to the No Action Alternative.

Implementation of a day-use limit to limit the number of people in Little Yosemite Valley during periods of peak use would have no effect on historic sites, structures, and landscapes.

The impacts of the VERP management actions would vary depending on the action taken. Management actions related to visitor education are expected to reduce impacts to historic sites, structures, and landscapes by encouraging more dispersion of visitors within wilderness areas and changing visitor behaviors by providing information on activities that cause adverse impacts. Educational efforts would be likely result in local, short and long-term, minor, beneficial impacts to historic resources. If VERP monitoring indicates that more restrictive measures are needed to reduce wilderness use (such as reducing trailhead quotas, restricting stock use, and limiting day-use access in heavily used areas to users with permits or guided groups), there would be a local, long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. These beneficial effects would be due to a potential decrease in visitor-related damage, such as trampling, vandalism, and wear and tear.

Overall, implementing daily segment limits and day-use limits in Little Yosemite Valley is not expected to affect historic sites, structures, and landscapes in the wilderness compared to the No Action Alternative. The implementation of restrictive measures that reduce wilderness use beyond the existing trailhead limits is expected to have a local, long-term, moderate, beneficial impact due to a potential reduction in visitor-related damage to these resources.

Impacts in Yosemite Valley. Historic sites, structures, and landscapes in Yosemite Valley include the Yosemite Valley Historic District, which consists of historic bridges, a campground, orchards, trails, roads, residences, administrative facilities, and visitor accommodations. This district includes the Yosemite Village Historic District and the Curry Village Historic District. The Valley also contains several National Register-eligible or -nominated historic buildings and three National Historic Landmarks: the LeConte Memorial Lodge, the Ranger's Club, and The Ahwahnee.

The daily segment limits for the Yosemite Valley segment would be close to existing levels of use. The park would manage the number of visitors in the Valley to ensure that the daily segment limits are not exceeded. If the limits were exceeded, management would take actions to reduce visitor numbers. Management actions could include limiting commercial and/or regional transit bus numbers, requiring commercial bus reservations, instituting a day-use reservation program, rerouting visitors trying to enter the Valley when the limit is reached, or instituting entrance station closures when the limit is reached.

The results of these management actions would depend on the action. Since all of the management actions would be aimed at lowering the number of people accessing Yosemite Valley, the local, long-term impact on historic sites, structures, and landscapes within the Valley would be minor to moderate and beneficial. This measure would likely result in lower levels of visitors in the Valley in the long term, and would therefore decrease the likelihood of visitor-related damage, such as vandalism, erosion, and wear and tear.

In addition to managing visitor numbers within the Valley, additional management actions would be implemented under VERP. The effects of VERP under Alternative 3 would be the same as described under Alternative 2. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and social trails, are expected to improve the natural and cultural setting and therefore result in local, short- and long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on car and/or bus access to Yosemite Valley, would benefit these resources by reducing opportunities for visitor-related damage such as vandalism, erosion, and wear and tear. These measures could result in short-term or long-term, moderate, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the design guidelines for Yosemite Valley (NPS 2004c). If the design is compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, Alternative 3 is expected to have a minor to moderate benefit to historic sites, structures, and landscapes by reducing the likelihood of visitor-related damage to these resources. Where these goals are achieved through education, the effect is expected to be long-term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions could have long-term, moderate to major, beneficial impacts to these resources. Other actions, such as site

hardening, could have long-term, minor to moderate, adverse effects or long-term, moderate, beneficial effects on historic sites, structures, and landscapes.

Impacts in the Gorge. Historic sites, structures, and landscapes in the Gorge segment include the Merced Canyon Travel Corridor and the remaining structures associated with the Yosemite Valley Hydroelectric Power Plant.

Limits for the Gorge segment are based on current use assumptions and available parking. The park would manage the number of visitors in the Gorge to ensure that the daily segment limits are not exceeded. If the limits were exceeded, management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, management could reduce parking to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge.

The results of these management actions would depend on the action taken. Implementation of daily segment limits would result in negligible effects in the short term, since the limits would be set at existing use levels. In the long term, the level of use would likely be lower than under the No Action Alternative. Since current use levels are low, visitor-related damage to historic sites, structures, and landscapes (such as vandalism, erosion, and wear and tear) is also low. This further reduction of use would provide a local, long-term, minor to moderate benefit to historic sites, structures, and landscapes in the Gorge segment.

In addition to managing visitor numbers within the Gorge segment, the park would implement VERP. The effects of VERP under Alternative 3 would be the same as described under Alternative 2. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor-related damage. These measures could result in short-term or long-term, negligible to minor, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of picnic facilities or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the design guidelines for Yosemite Valley (NPS 2004c). If the design is compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, Alternative 3 is expected to have a minor to moderate benefit to historic sites, structures, and landscapes in the Gorge segment by reducing the likelihood of visitor-related damage to these resources. Where these goals are achieved through education, the effect is expected to be long-term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions could have long-term, moderate to major, beneficial impacts to these resources. Other actions such as site hardening could have long-term, minor to moderate, adverse effects or long-term, moderate, beneficial effects on historic sites, structures, and landscapes.

Impacts in El Portal. Historic sites, structures, and landscapes in El Portal consist of the Old El Portal cultural landscape, the Murchison (National Lead Company) structures, railroad houses,

the chapel, the old store, the El Portal Market, the old hotel (Yosemite Institute administrative offices), Bagby Station, and other sites and structures related to early industry, homesteading, and tourism in the Merced River corridor. Some of these structures are privately owned or used only as National Park Service or park partner's administrative facilities. Because these structures are not open to the public, they are unlikely to experience adverse effects from visitor use.

The boundary for the El Portal segment of the river in Alternative 3 would be based on the locations of specific ORVs. Zoning for the El Portal corridor under this alternative calls for Park Operations and Administration (3C) north of the river and in existing developed areas south of the river, and Day Use (2C) in the undeveloped areas south of the river. A significant cultural resources area north of the river would be zoned 2C.

The proposed boundary and zoning designations for the El Portal segment would allow additional development or redevelopment within the areas zoned 3C, but the areas zoned 2C along much of the river corridor would substantially limit development potential in El Portal. Increased development north of the river could adversely affect the historic landscape if the new design were incompatible with the character of the landscape. Likewise, additional development could increase the number of visitors, employees, and residents exposed to these resources and therefore increase the likelihood of damage such as vandalism, erosion, and wear and tear.

The areas zoned Discovery (2B) south of the river is characterized by quiet and natural areas. Only limited development would be appropriate in this zone. Because this zoning is restrictive on development and Alternative 1 leaves the area unzoned, Alternative 3 would likely result in minor, beneficial impacts on historic sites, structures, and landscapes when compared to Alternative 1.

The areas zoned Day Use (2C) south of the river would allow for development of trails, restrooms, and picnic areas. The additional development could adversely affect historic sites within the segment due to the increase in visitor contact with these resources. However, the potential actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and 2004 design guidelines. Therefore the adverse effects of new development would likely be local, long term, and negligible to minor. Conversely, if the design is compatible with the historic landscape character and if the new facilities reduce the likelihood of visitor or employee-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

In general, the El Portal river corridor boundary and management zoning under Alternative 3 would have a local, long-term, moderate, beneficial effect to historic sites, structures, and landscapes when compared to Alternative 1.

Implementation of VERP within the El Portal segment would include monitoring of the indicators identified for areas zoned 2B, 2C, and 3C. Educational measures are expected to result in local, short-and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor or employee-related damage. These measures could result in short-term or long-term, moderate to major, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of picnic facilities or roadway improvements, could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, the potential actions

would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and 2004 design guidelines. Therefore, the adverse effects of new development would likely be local, long term, and negligible to minor. Conversely, if the design is compatible with the historic landscape character and if the new facilities reduce the likelihood of visitor or employee-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, local, long-term, minor, adverse impacts and local, short- and long-term, moderate, beneficial impacts on historic sites, structures, and landscapes could occur under Alternative 3. However, negative effects would be reduced in intensity under Alternative 3 by the application of zoning within the larger, revised river corridor boundary (as compared to Alternative 1). The implementation of daily segment limits and VERP could have long-term moderate beneficial impact to historic sites, structures, and landscapes and local, long-term, negligible to minor, adverse impacts, depending on the management action taken.

Impacts in Wawona. Historic sites, structures, and landscapes in Wawona include the Washburn cultural landscape, the Chowchilla Mountain Road, Civilian Conservation Corps structures, the Wawona Covered Bridge, the Wawona Hotel (a National Historic Landmark), and the Pioneer Yosemite History Center. Many relocated, individually listed National Register historic structures comprise the Pioneer Yosemite History Center.

Implementation of daily segment limits for Wawona would be expected to have negligible effects on historic sites, structures, and landscapes in the short term. If future visitor levels in Wawona reached the daily segment limit, park management would take actions to restrict or reduce visitor levels to meet the proposed limits. Visitor use could be decreased by reducing parking, requiring reservations, or limiting overall numbers of visitors into the area through the South Entrance Station. Due to the decreased likelihood of visitor-related damage on historic sites, structures, and landscapes, these measures could have local, long-term, minor to moderate, benefits on these resources compared to the No Action Alternative.

Implementation of the VERP program in Wawona under Alternative 3 would be the same as described under Alternative 2. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and social trails, are expected to improve the natural and cultural setting and result in local, short- and long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as limits on activities near the river or reduced activity levels, would benefit these resources by reducing opportunities for visitor-related damage. These measures could result in short-term or long-term, minor to moderate, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on historic landscapes. Any new design would be compatible with the historic landscape character, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, minor to moderate, beneficial effect on these resources.

In the Below Wawona segment, which would be zoned for Undeveloped Open Space (2A+), VERP management to address the number of people and social trails would likely be focused on education and more restrictive measures to reduce visitor levels and restore the natural resources. Site hardening would not be appropriate in this area. Education efforts to limit the number of

visitors and reduce impacts to resources are expected to have long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures, such as enforced limits on the number of people accessing the area, would benefit the cultural ORV by decreasing the likelihood of visitor-related damage such as vandalism, erosion, and wear and tear.

Summary of Alternative 3 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement, Yosemite National Park Design Guidelines, and federal laws such as the National Historic Preservation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

VERP would provide a suite of data to help monitor and preserve historic sites, structures, and landscapes. Under Alternative 3, overall visitor numbers in the future would likely be lower than under Alternatives 1. Segment limits and management actions taken to protect ORVs and other resources would result in less congestion and crowding and less likelihood of visitor-related damage to cultural resources. The improvements to the natural setting and reduced crowding and congestion would likely provide benefits to historic sites, structures, and landscapes within the corridor. If restrictive management actions are required to achieve these natural and social conditions, there would be moderate benefits to these resources due to a reduction of visitor-related damage. The larger river corridor boundary and management zones in El Portal that result in a reduce development potential would have a minor to moderate, beneficial impact compared to Alternative 1.

Overall, the implementation of daily segment limits and a VERP program would result in both long-term, minor to moderate, beneficial impacts on historic sites, structures, and landscapes and potentially long-term, minor, adverse effects on these resources related to increased development in some areas.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in both long-term, beneficial impacts on historic sites, structures, and landscapes and long-term, adverse effects due to an increase in development.

Past, present, and reasonably foreseeable future cumulative actions could have long-term, beneficial impacts, and long-term, adverse impacts on historic sites, structures and landscapes and the historic component of the cultural ORV within the Merced River Corridor. Overall these cumulative actions in combination with Alternative 3 could have a net long-term, moderate, adverse impact on historic sites, structures, and landscapes within the Merced River corridor.

Impairment

Because adverse impacts to historic sites, structures, and landscapes are negligible to minor, Alternative 3 is not expected to impair the park's historic resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions

that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo their own environmental review to determine their potential effect on historic properties.

Visitor Experience

Analysis

The following discussion provides an overview of the types of impacts to recreation, interpretation and orientation, visitor services, and wilderness experience that could occur within each segment of the Merced River corridor under Alternative 3. The analysis for the El Portal segment also describes the types of impacts to visitor experience that could occur based on the adoption of a quarter-mile river corridor boundary.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on the visitor experience. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to the visitor experience associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to the visitor experience are expected to be minor to moderate, and adverse.

Recreation

Analysis

The following discussion provides an overview of the types of impacts to recreation resources that could occur within each segment of the Merced River corridor from implementation of Alternative 3. Effects on recreation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Recreation ORVs in the Wilderness segment include outstanding opportunities for solitude along the river, primitive and unconfined recreation, and recreational opportunities such as day hiking, backpacking, horseback riding and packing, camping, and the enjoyment of natural river sounds.

Under Alternative 3, user capacity within wilderness areas would be managed under daily daily segment limits (set at existing wilderness trailhead limits), an annual maximum visitor limit, a day use limit on the trail to Half Dome, and the VERP program, in addition to the existing user capacity management policies described under Alternative 1. The annual maximum visitor cap would not be expected to affect wilderness visitor use. The day use limit could result in local, long-term, moderate to major, beneficial effects on the visitor experience for visitors seeking more solitude in the wilderness in areas accessible to day use. The limit would also result in a local, long-term, moderate to major, adverse effect on visitors who may not be able to access Half Dome during peak periods.

Implementation of VERP under Alternative 3 would be the same as under Alternative 2. The impacts would vary depending on the management actions implemented. Management actions that reduce use levels in the wilderness would have local, moderate to major, adverse effects on

some visitors, but would likely improve the wilderness experience for other visitors, resulting in local, minor to moderate, beneficial effects.

Overall, Alternative 3 would be expected to protection and enhance the wilderness resources and the solitude of the wilderness experience, as encompassed in the recreation ORVs.

Impacts in Yosemite Valley. Under Alternative 3, the daily segment limits for the Yosemite Valley segment would be set based on the maximum capacity of existing visitor facilities. Park management would manage the number of visitors in the Valley to ensure that the daily segment limits and maximum annual corridorwide visitation limits are not exceeded. If visitor numbers exceeded the limits, management would reduce visitor numbers through entrance station restrictions, day-use permit requirements, or other means. These restrictions would be designed to maintain the spectrum of recreational opportunities encompassed by the recreation ORVs, although there could be limits of the levels of some activities. Restrictions on the number of visitors in the Valley in the long term would likely result in decreased traffic and crowding as compared to the No Action Alternative, and there would be a local, long-term, minor to moderate, beneficial effect on the recreation experience for those visitors who are in the Valley. Implementation of entrance station restrictions or other limits on visitor access to Yosemite Valley would also eliminate some potential visitor access to the Valley and its recreation opportunities, resulting in a local, long-term, moderate to major, adverse effect on recreation.

Alternative 3 would also implement the VERP program and the other user capacity management measures identified under Alternative 2. Since the VERP program under Alternative 3 would be the same as under Alternative 2, the effects would be the same as those described under Alternative 2. Effects would range from beneficial to adverse depending upon the type of management actions implemented in response to VERP. Actions which improve the natural environment without decreasing access would have beneficial effects while more restrictive measures would have adverse effects on access to recreation.

Overall, implementation of the proposed maximum daily segment limits, and the maximum annual visitor limit, with a VERP program that would include implementation of appropriate management actions when required based on monitoring results, is expected to benefit the visitor experience by reducing traffic congestion and crowding, and conserving the natural and cultural environment. The beneficial effects would be expected to be minor to moderate, depending on the management action. The restriction of visitor access and reduced opportunities for some visitors to access recreational opportunities would also, however, result in local, long-term, moderate to major, adverse effects on the visitor experience. Since this alternative would restrict future visitor use levels to the daily segment limits, regardless of the condition of the resources monitored through VERP, the adverse effects on visitor experience are expected to increase relative to Alternative 1.

Impacts in the Gorge. The maximum daily segment limits for the Gorge would be based on the maximum capacity of existing facilities (parking). Park management would manage the number of visitors in the Gorge to ensure that the daily segment limits were not exceeded. If visitor numbers exceed the daily limit, management would reduce visitor numbers through limiting entrance station access or reducing parking availability. Implementation of these limits would result in negligible effects in the short term, since the limit would be set at existing use levels. In the long term, the level of use could be lower than under the No Action Alternative. Since current use levels are currently low and there are few crowding problems, this reduction of use would

provide for a local, long-term, negligible, benefit to the recreation experience for users of the gorge. The restrictions would also result in local, long-term, moderate, adverse effects on some visitors due to the decreased access to the area on peak days.

Effects would range from beneficial to adverse depending upon the type of management actions implemented in response to VERP. Actions which improve the natural environment without decreasing access would have beneficial effects while more restrictive measures would have adverse effects on access to recreation. Restrictions implemented under VERP would be designed to maintain the spectrum of recreational opportunities, as encompassed in the recreation ORVs, although levels of some specific activities may be limited.

Overall, implementation of the proposed maximum daily segment limits, and the maximum annual visitor limit, with a VERP program that would include implementation of appropriate management actions when required based on monitoring results, is expected to benefit the visitor experience by reducing traffic congestion and crowding, and conserving the natural and cultural environment. The beneficial effects would be expected to be minor to moderate, depending on the management action. The restriction of visitor access and reduced opportunities for some visitors to access recreational opportunities would also, however, result in local, long-term, moderate to major, adverse effects on the visitor experience. Since this alternative would restrict future visitor use levels to the daily segment limits, regardless of the condition of the resources monitored through VERP, the adverse effects on visitor experience are expected to increase relative to Alternative 1.

Impacts in El Portal. The boundary for the El Portal segment of the river under Alternative 3 would be a quarter-mile. The zoning for the El Portal corridor under Alternative 3 calls for park administrative uses (3C) north of the river, and low-intensity Discovery (2B) for the majority of the undeveloped areas south of the river. Since there are few existing visitor facilities on National Park Service lands in El Portal and visitor use is limited within the corridor, the proposed zoning is not expected to adversely affect recreation within this segment.

The proposed boundary and management zoning for the El Portal segment is likely to result in some additional development or redevelopment within the zone 3C areas. The areas within the corridor that would be zoned 3C would have the potential to be developed as administrative facilities, but only if these facilities can meet the criteria for construction within the river corridor (protection of the ORVs and compliance with other elements of the Merced River Plan). Development of additional administrative facilities would not be expected to adversely affect access to or opportunities for recreation activities, since these areas are not currently used for recreation access. Since there are no existing visitor facilities on National Park Service lands, visitor use is limited within the corridor, and recreational activities in this area are focused on the river itself, the proposed boundary and zoning are expected to have a long-term, local, negligible, adverse effect on access to recreation, the quality of the visitor experience, and the recreation ORVs within this segment.

Implementation of the maximum daily segment limits for El Portal would be expected to have negligible effects on recreation in the short term, since recreation use of this area is limited and the limits are based on maximum capacity of existing facilities. Future growth in recreation use of the area could result in implementation of measures to limit visitor use to the adopted limit. Implementation of limits on visitors using the area for recreation could have local, long-term,

minor to moderate, adverse effects on some visitors through reduced access to recreational activities; however, the spectrum of recreational opportunities would be maintained.

As under Alternative 2, implementation of the VERP program under Alternative 3 would be expected to have local, long-term, minor, beneficial effects or local, short- or long-term, minor to moderate, adverse effects on recreation and visitor experience, depending upon the management actions implemented.

Overall, implementation of Alternative 3 would result in more long-term, adverse effects on recreation and visitor experience compared to Alternative 1, due to the additional restrictions on visitor access that would be implemented to limit visitor numbers under the maximum daily segment limits and the annual maximum visitor limit for the corridor.

Impacts in Wawona. Implementation of daily segment limits for Wawona under Alternative 3 would not be expected to result in adverse effects to recreation in the short term. If future visitor use levels in Wawona reached the daily segment limits, management would take actions to restrict or reduce visitor use levels to meet the proposed limits. The spectrum of recreational opportunities would be maintained, while levels of use may be restricted. These measures could have local, long-term, moderate, adverse effects on access to recreational opportunities.

Alternative 3 would implement the VERP program and the other user capacity management measures identified under Alternative 2. Since the VERP program under Alternative 3 would be the same as under Alternative 2, the effects would be the same as those described under Alternative 2. Effects on recreation could be local, long-term, negligible to minor, beneficial effects or local, short- or long-term, minor to moderate, adverse effects on recreation and visitor experience, depending upon the management action.

Overall, implementation of Alternative 3 would likely result in more long-term adverse effects on recreation and visitor experience than Alternative 1, due to the additional restrictions on visitor access that would be implemented to limit visitor numbers to the daily segment limits and maximum annual visitor limits.

Summary of Alternative 3 Impacts. Implementation of daily segment limits and an annual maximum visitor limit for the corridor would be expected to reduce overall visitor numbers in the long term, compared to Alternative 1. This would have a long-term, local, minor to major, adverse effect on access to recreational opportunities in the river corridor, regardless of the condition of the resources. Implementation of additional management actions to address information from VERP monitoring would be expected to result in improvements of natural and social conditions within the corridor. The improvements to the natural setting and reduced crowding and congestion would be expected to provide local, long-term, minor to moderate benefits to recreation and visitor experiences within the corridor. If restrictive management actions are required to achieve these natural and social conditions, however, there would be adverse effects on recreation and visitor experience related to decreased opportunities for recreation. The duration and intensity of these adverse effects would depend upon the duration and extent of the restrictive measures. Any restrictions would be designed to maintain the spectrum of recreation opportunities, although levels of use could be restricted. Overall, the addition of the daily segment limits, maximum annual visitor limits for the corridor, and VERP to the other existing user capacity measures under Alternative 3 would result in more local, long-term, adverse effects on access to recreation opportunities compared to Alternative 1.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are summarized under Alternative 1. These cumulative projects would have a long-term, negligible to minor, beneficial impact, because the beneficial impacts associated with increased visitor access and expanded recreational opportunities would be partially offset by the adverse impacts associated with the removal of specific recreational opportunities.

Alternative 3 and the cumulative projects would be expected to have both beneficial and adverse long-term cumulative effects on recreation, visitor experience, and the recreation ORVs. The duration and intensity of these adverse effects would depend upon the duration and extent of the restrictive measures, but the incorporation of daily segment limits would likely increase the adverse effects beyond those associated with VERP. Implementation of the daily segment limits and the maximum annual visitor limit would result in future restrictions on visitor use levels and access, regardless of the condition of the resources.

Interpretation and Orientation

Analysis

The following discussion provides an overview of the types of impacts to interpretation and orientation that could occur within each segment of the Merced River corridor under Alternative 3.

Impacts in Wilderness. Segment limits for wilderness areas would be set at current trailhead quota levels and the annual maximum visitor limit for the corridor would not likely affect wilderness use. Therefore, the segment and corridorwide limits would not affect access to or availability of interpretive programs in wilderness areas. The day use limit for Half Dome would also be set at current peak levels and would not likely result in any effects on interpretive programs. Implementation of the proposed user capacity program with VERP in wilderness areas would be the same as described for Alternative 2. This could result in a local, short- or long-term, negligible to minor, adverse effect on visitor experience from reduced access to interpretative programs in wilderness areas as compared to the opportunities under the No Action Alternative.

Impacts in Yosemite Valley. Implementation of daily segment limits and an annual maximum visitor limit for the corridor could result in implementation of measures to limit the number of visitors in the future. This would result in reduced access to orientation and interpretive programs in the Valley, resulting in a local, long-term, minor, adverse effect. Implementation of the VERP program in Yosemite Valley would be the same as described under Alternative 2. Overall, changes in interpretative programs and orientation could result in local, long-term, minor, adverse impacts on visitor experience if restrictions are implemented that reduce visitor access to orientation and interpretive programs as compared to Alternative 1.

Impacts in the Gorge. No interpretive programs are currently offered in the Gorge segment. Implementation of the proposed daily segment limits, the maximum annual corridorwide visitor limit, and the VERP program would not be expected to change this. Therefore, Alternative 3 would not impact interpretation and orientation compared to Alternative 1.

Impacts in El Portal. The proposed corridor boundary and zoning for Alternative 3 includes areas zoned for administrative use (3C) and day use (2C). It is not anticipated that interpretive programs would be provided in 2B or 3C areas. Although the 2C areas would allow for visitor

facilities, most are located in areas that are not likely to be developed for visitor facilities. There are currently limited interpretive programs in El Portal, and the proposed boundaries and management zoning would not affect these programs.

Due to the low visitor use of El Portal and the limited interpretive programs, implementation of daily segment limits and an annual maximum visitor limit would not likely affect interpretation and orientation programs in this segment. Implementation of VERP could reduce access if required to address resource conditions. These effects would be expected to be local, long-term, minor and adverse since there are limited programs in the area.

Impacts in Wawona. Implementation of daily segment limits in Wawona and an annual visitor limit for the corridor could result in a decrease in visitor levels in this segment in the long term. Restrictions on visitor levels would restrict access to interpretive and orientation programs, resulting in a local, long- term, minor, adverse effect on visitor experience compared to the No Action Alternative. Implementation of the VERP program in Wawona would be the same as described under Alternative 2. Overall, the impacts to interpretive and orientation programs in Wawona would be expected to be local, long-term, minor, and adverse.

Summary of Alternative 3 Impacts. Alternative 3 could have local, long-term, minor, adverse impacts on visitor experience if visitor limits and VERP management actions reduce visitor access to and availability of interpretation and orientation programs and services.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. These cumulative projects would have a long-term, minor, beneficial impact, because the beneficial impacts associated with an increase in interpretation and orientation programs and services would only be partially offset by the potential loss of ranger-led hikes in the wilderness.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, negligible, adverse cumulative impact because the availability and diversity of interpretation and orientation programs and services would increase through some of the cumulative projects, but Alternative 3 could result in management actions that reduce access to and availability of interpretation and orientation programs and services.

Visitor Services

Analysis

The following discussion provides an overview of the types of impacts to visitor services that could occur within each segment of the Merced River under Alternative 3. Effects on visitor services from the proposed corridor boundary and zoning in El Portal under Alternative 3 are also addressed for the El Portal segment.

Impacts in Wilderness. Since daily segment limits for wilderness areas would be set at existing trailhead quota numbers, the daily segment limits would not affect visitor services in the Wilderness. The maximum annual visitor limit is not expected to affect wilderness users. Implementation of the VERP program under Alternative 3 would be the same as described for Alternative 2. Since wilderness areas currently have low levels of visitor services, Alternative 3

could result in local, short- or long-term, minor, adverse effects on visitor experience through reduced services and opportunities in wilderness areas if VERP standards were not being met.

Impacts in Yosemite Valley. Implementation of daily segment limits in the Valley and a maximum corridorwide annual visitor limit could result in lower visitation levels in the Valley in the future compared to Alternative 1. These levels would be restricted regardless of the condition of resources. Management actions to limit visitor numbers could reduce access to visitor services resulting in a local, long- term, minor to moderate, adverse impact. Implementation of VERP under Alternative 3 would result in the same effects described for Alternative 2. Therefore, the overall impacts of Alternative 3 on provision of and access to visitor services would be expected to be local, long- term, minor to moderate, and adverse.

Impacts in the Gorge. Implementation of daily segment limits within the Gorge segment and a maximum annual visitor limit for the corridor would be expected to result in lower visitor levels in the long term. Since there are few visitor services in the gorge, the effects of the visitor limits would likely be negligible. Implementation of VERP under Alternative 3 would result in the same effects described under Alternative 2. Therefore, Alternative 3 would not be expected to affect provision of and access to visitor services in the Gorge.

Impacts in El Portal. The proposed corridor boundary and zoning for this alternative includes limited areas zoned for day use. Although this zoning would allow for future development of visitor services on National Park Service lands, those areas zoned for day use are not located in areas that are likely to be suitable for day use facilities. The corridor boundary and zoning configuration would not be expected to impact availability of existing visitor services in El Portal.

Implementation of daily segment limits and an annual maximum visitor limit could reduce visitor use levels in the corridor in the long term. However, most visitor services in El Portal are provided by private businesses on private property and would not be impacted by the park's user capacity program. Therefore, implementation of daily segment limits and a VERP program would not affect visitor services available in the El Portal segment.

Impacts in Wawona. Implementation of daily segment limits in Wawona and the maximum annual visitor limit for the corridor would not be expected to result in substantive changes to use levels in the short term. In the long term, visitor levels in Wawona could be lower than levels expected under Alternative 1. The visitor limits would not be expected to result in decreased availability of visitor services in the short term. In the long term, management actions taken to reduce visitor levels could reduce access to visitor services resulting in a local, long-term, minor, adverse effect. Implementation of VERP under Alternative 3 would result in the same effects described for Alternative 2. Therefore, the overall impacts of Alternative 3 on provision of and access to visitor services would be expected to be local, long-term, minor, and adverse.

Summary of Alternative 3 Impacts. Actions taken under Alternative 3 would be expected to result in local, long-term, minor to moderate, adverse impacts on access to and the availability of visitor services. Implementation of daily segment limits and the maximum annual limit, which limit visitor numbers regardless of resource conditions, would likely result in more adverse effects than Alternative 1.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable projects are described under Alternative 1. The cumulative projects would have a long-term, minor to moderate, adverse impact on visitor services due to the overall reduction of overnight accommodations in Yosemite Valley and potential additional restrictions on facilities and activities in wilderness areas. These adverse impacts would be partially offset by improving parking and traffic circulation in Yosemite Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse impact on visitor services because of the potential reduction of overnight accommodations in Yosemite Valley, additional restrictions in wilderness areas, and the visitor limits implemented under this alternative. This adverse impact would be partially offset by improving parking and traffic circulation within the Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Wilderness Experience

Analysis

The following discussion provides an overview of the types of impacts to the wilderness experience that could occur within the Merced River corridor under Alternative 3.

Under Alternative 3, the National Park Service would adopt daily segment limits, a maximum annual visitor limit for the corridor, and the VERP program. For wilderness areas, the daily segment limits would be set at the existing trailhead quota levels and would not affect the wilderness experience for overnight visitors. The proposed day use limit on the Half Dome trail would likely result in local, long-term, moderate to major, adverse effects on visitors who would not be able to access this area during peak periods. The day use limits would also result in an improved wilderness experience for those visitors who did access the trail during peak periods. This would likely result in a local, long-term, moderate, beneficial effect on wilderness experience for these visitors. The maximum annual visitor limit for the corridor would not likely affect the wilderness experience. Actions taken under VERP could result in local, long-term, adverse or beneficial effects depending on the management actions taken. Therefore, implementation of Alternative 3 would result in local, long-term, moderate, adverse effects on the wilderness experience as compared to Alternative 1 due to the increased adverse effect of the day use limit for the Half Dome trail.

Summary of Alternative 3 Impacts. The effects of Alternative 3, including adoption of daily segment limits, an annual maximum visitor limit, and a day use limit for the Half Dome trail, along with implementation of the VERP program, would be expected to be local, long-term, moderate, and adverse compared to Alternative 1.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. These cumulative projects would have a long-term, minor, beneficial impact on the wilderness experience, because the wilderness ecosystem would be improved and this benefit would only be partially offset by potential adverse effects of possible additional restrictions on wilderness activities and facilities.

Alternative 3 and the cumulative projects would result in a local, long-term, negligible to minor, beneficial, impact to the wilderness experience, because the beneficial improvements to the wilderness ecosystem would be partially offset by the potential additional restrictions on wilderness uses and the Half Dome visitor limit in this alternative.

Social Resources

Land Use

Analysis

The following discussion provides an overview of the types of impacts to land use that could occur within each segment of the Merced River corridor. The analysis for the El Portal segment also describes the types of impacts to land use that could occur based on the adoption of a quarter-mile river corridor boundary as proposed under this alternative. Alternative 3 would not be expected to result in any changes to land use within the park. Development in El Portal is addressed below.

Impacts in Wilderness. Under Alternative 3, implementation of daily segment limits and the maximum annual visitor limit would not affect land use in wilderness areas. Implementation of the VERP program would be consistent with existing management zoning and existing land uses in the Wilderness segment of the river corridor.

Impacts in Yosemite Valley. Under Alternative 3, implementation of daily segment limits and the maximum annual visitor limit would not affect land use in Yosemite Valley. Implementation of VERP monitoring would be consistent with existing park management zoning designations and land use in the Yosemite Valley segment.

Impacts in the Gorge. Under Alternative 3, implementation of daily segment limits and the maximum annual visitor limit would not affect land use in the Gorge. Implementation of VERP monitoring would be consistent with existing park management zoning designations and land use in the Gorge segment.

Impacts in the El Portal Administrative Site. Under Alternative 3, the El Portal boundary would include a quarter-mile on each side of the river. The river corridor boundary would include 853 acres, of which 323 acres would be zoned Discovery (2B), 131 acres would be zoned Day Use (2C), and the other 399 acres would be zoned Park Operations and Administration (3C). As described under Alternative 2, facilities developed within the river corridor must meet more stringent standards than development outside the corridor. Since Alternative 3 incorporates more of the El Portal area within the boundary, it would likely result in less overall development of residential and administrative facilities in the El Portal area, reducing the potential for adverse effects on land use as compared to Alternative 1. Overall, any potential development would be consistent with existing development in the area and with the adopted management zoning prescriptions.

Implementation of Alternative 3, with daily segment limits, the maximum annual visitor limit, and VERP monitoring, would be consistent with the management zoning as adopted under this alternative.

Impacts to Wawona. Under Alternative 3, implementation of daily segment limits and the maximum annual visitor limit would not affect land use in Wawona. Implementation of VERP monitoring would be consistent with existing park zoning designations and existing land use.

Summary of Alternative 3 Impacts. Under Alternative 3, implementation of a user capacity program with maximum daily segment limits, a maximum annual visitor limit, and VERP monitoring would provide park management with tools to achieve the desired conditions outlined in the management zones. Implementation of Alternative 3 would be consistent with existing park management zone designations and existing land uses. In El Portal, the proposed river corridor boundary and zoning would result in a local, long-term, minor, beneficial effect on land use as compared to Alternative 1.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable projects were described under Alternative 1. Overall, the cumulative projects would be expected to have local, long-term, minor to moderate, adverse effects on land use due to the potential for additional development of residential and administrative uses and a decrease in open space in the El Portal and Wawona areas. The impacts should be offset somewhat by the planning efforts underway on countywide planning and the El Portal Concept Plan.

The cumulative effects of Alternative 3 and the cumulative projects would result in local, long-term, minor, adverse effects on land use within the river corridor.

Transportation

Analysis

The following discussion provides an overview of the types of impacts to transportation conditions associated with Alternative 3. Alternative 3 includes daily segment limits, a maximum annual visitor limit, and a day-use limit on the Half Dome trail, as well as a VERP program. Since transportation resources are affected by peak visitor levels and not annual levels, this analysis focuses on the daily maximum limit levels and VERP. Because transportation services and facilities are not provided in Yosemite wilderness areas, this analysis does not address impacts in the Wilderness segments of the river corridor.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on transportation. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to transportation associated with redirection of visitors would be short-term, and variable in location and could occur in areas within or adjacent to the park. Therefore, potential impacts to transportation are expected to be minor to moderate, and adverse.

Impacts in Yosemite Valley. Under Alternative 3, the daily maximum daily segment limit for the Yosemite Valley would be set based on existing maximum capacity of visitor facilities. Since this maximum level would likely be close to current peak levels, short-term effects on transportation would be expected to be negligible. The daily segment limits would likely result in lower visitor numbers in the long term compared to Alternative 1, thereby resulting in lower traffic and congestion, and a local, long-term, minor to moderate, beneficial effect on transportation.

Implementation of VERP under Alternative 3 would be the same as discussed under Alternative 2. Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program will include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process were to determine that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, implementation of Alternative 3 would also have local, long- term, minor to moderate benefits on congestion and parking in the Valley associated with maximum daily segment limits that restrict future growth in visitor levels and implementation of VERP. The intensity of the benefits would depend on the specific measures implemented under VERP.

Impacts in the Gorge. The maximum daily segment limit for the Gorge segment under Alternative 3 would be based on the maximum capacity of available parking spaces. As discussed above, the limit would not likely affect visitor levels in the short term, but could restrict future growth in visitor levels. Lower future visitor levels would result in local, long-term, minor benefits to transportation in the Gorge, as compared to Alternative 1.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, implementation of Alternative 3 would also have local, long- term, minor to moderate benefits on congestion and parking in the Gorge segment associated with maximum daily segment limits that restrict future growth in visitor levels and implementation of VERP. The intensity of the benefits would depend on the specific measures implemented under VERP.

Impacts in El Portal. The proposed boundary and management zoning in El Portal would include more area in the corridor boundary. Most areas north of the river would be zoned for administrative use. Although day-visitor parking and employee housing could be constructed in these areas, any development would be required to meet all conditions of the Merced River Plan and the Wild and Scenic Rivers Act. Development of additional employee housing and, potentially, day-visitor parking could result in increased traffic on local roads and park access roads. Development potential under Alternative 3, however, would be less than under Alternative 1, resulting in a local, long-term, negligible, beneficial effect on transportation from development-related effects.

The maximum daily segment limit for the El Portal segment under Alternative 3 would be based on the maximum capacity of available parking spaces. As discussed above, the limit would not likely affect visitor levels in the short term, but could restrict future growth in visitor levels. Lower

future visitor levels would result in local, long-term, minor benefits to transportation in the El Portal, as compared to Alternative 1.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, implementation of Alternative 3 would also have local, long- term, minor to moderate benefits on congestion and parking in El Portal associated with maximum daily segment limits that restrict future growth in visitor levels and implementation of VERP. The intensity of the benefits would depend on the specific measures implemented under VERP.

Impacts in Wawona. The maximum daily segment limit for the Wawona segments under Alternative 3 would be based estimated maximum capacity levels. As discussed above, the limit would not likely affect visitor levels in the short term, but could restrict future growth in visitor levels. Lower future visitor levels would result in local, long-term, minor benefits to transportation in Wawona, as compared to Alternative 1.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, implementation of Alternative 3 would also have local, long- term, minor to moderate benefits on congestion and parking in Wawona associated with maximum daily segment limits that restrict future growth in visitor levels and implementation of VERP. The intensity of the benefits would depend on the specific measures implemented under VERP.

Summary of Alternative 3 Impacts. Implementation of maximum daily segment limits combined with VERP would be expected to result in local, long-term, minor to moderate, benefits on transportation, compared to Alternative 1. The Alternative 3 daily segment limits would likely result in lower future visitor levels, thus reducing traffic and congestion. The intensity of the benefits associated with implementation of VERP would depend on the specific measures identified.

Cumulative Impacts

The effects on transportation associated with cumulative projects were addressed under Alternative 1. These effects are expected to be local, long-term, minor to moderate, and beneficial. The cumulative effect of Alternative 3 and the other projects would also be expected to be local, long-term, minor to moderate, and beneficial.

Scenic Resources

Analysis

The following discussion provides an overview of the types of impacts to scenic resources that could occur within each segment of the Merced River corridor under Alternative 3.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have a beneficial effect on scenic resources. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to scenic resources associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to scenic resources is expected to be negligible to minor, and beneficial.

Impacts in Wilderness. Scenic ORVs in the Wilderness segments of the Merced River corridor include views from the Merced River and its banks of the exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.

No additional management actions would need to be taken to implement the daily segment limits, because the trailhead quotas for the Wilderness segments would be set at current levels. Implementation of the daily segment limits in the Wilderness segments would have no effect on scenic resources compared to the No Action Alternative.

Implementation of VERP monitoring and management program for the wilderness areas would result in additional monitoring of indicators within the Wilderness segments. VERP wildlife, social, and water quality indicators would be monitored due to the more concentrated uses in these areas.

Indicators have been selected to provide overall information on the health of resources within the Wilderness segments. Management actions associated with achieving indicator standards would not affect the scenic ORVs or visitors' ability to view scenic ORVs in the Wilderness. Therefore, implementation of the VERP program overall is not expected to affect scenic resources and the scenic ORVs.

The combination of daily segment limits with VERP monitoring is expected to have no impact on the scenic resources and the scenic ORVs within the Wilderness segments of the Merced River corridor.

Impacts in Yosemite Valley. The scenic ORVs within Yosemite Valley include views from the Merced River and its banks of waterfalls and water features, rock cliffs, meadows, and forests throughout the Yosemite Valley segment.

The daily segment limits for the Yosemite Valley segment would be set close to existing levels of use. Park management would manage the number of visitors in the Valley to ensure that the daily segment limits were not exceeded. If the number of visitors exceeded the limits, management would take actions to reduce visitor numbers. Management actions could include limiting the number of commercial or regional transit buses, requiring commercial bus reservations, instituting a day-use reservation program, rerouting visitors, or instituting entrance station closures.

The results of these management actions would depend on the management action taken. Since all of the management actions would be aimed at lowering the number of people accessing Yosemite Valley, the local, long-term effect would be negligible and beneficial to visitors' ability to view scenic resources within the Valley. Fewer users would result in decreased traffic and crowding compared to the No Action Alternative.

Additional management actions would be implemented if monitoring of the VERP indicators showed that standards for these indicators were not being met. The effects of these additional management actions within the Valley would vary by the action. Educational measures to change visitor behavior in ways that reduce vegetation trampling, riverbank erosion and water pollution would improve the natural setting and therefore could result in local, short- and long-term, negligible, beneficial effects on scenic resources. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on automobile or bus access to Yosemite Valley, would benefit the natural setting and reduce traffic congestion, and could result in short- or long-term, beneficial impacts to visitors' ability to observe scenery. Site hardening, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on the natural environment but would be limited to areas designated for higher levels of development and use. New or improved site design would follow Yosemite Valley design guidelines (NPS 2004c). Because these guidelines require consideration of significant views in all new design, site-hardening activities would result in local, long-term, negligible to minor, beneficial effects to scenic resources in these areas.

Overall, implementation of the proposed user capacity program with daily segment limits and the VERP program is expected to have a negligible benefit to scenic resources by reducing traffic congestion and crowding; conserving the natural and cultural environment; and providing better, less crowded, and less obstructed access to valued viewpoints. Where these goals would be achieved through education, site hardening, and other nonrestrictive management actions, the effect on scenic resources would likely be long term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions on visitor transportation options, types of activities, and levels of use could also have long-term, negligible, beneficial impacts on scenic resources.

Impacts in the Gorge. The scenic ORVs for the Gorge segment of the river corridor include views from the Merced River and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.

The daily segment limit for the Gorge segment would be based on existing use levels derived from available parking. Park management would manage the number of visitors in the Gorge segment to ensure that the daily segment limit was not exceeded. If the number of visitors exceeded the limit, management would take actions to reduce visitor numbers. Since access to the Merced River gorge is limited by available parking, park management could reduce use levels by reducing the amount of parking. Management actions could also include instituting a day-use reservation program for entry into the park or closing entrance stations when the limit is reached. These measures would control the overall number of people able to access the Gorge segment.

The results of these management actions would depend on the management action taken. Implementation of the daily segment limit would result in negligible effects in the short term, because the limit would be set at existing use levels. In the long term, the level of use would likely be lower than under the No Action Alternative. Since use levels are currently low and there are

few crowding problems in the Gorge segment, a reduction of use would provide a local, long-term, negligible benefit to scenic resources.

In addition to managing visitor numbers within the Gorge segment, additional management actions would be implemented if monitoring of the VERP indicators showed that standards for these indicators were not being met. The effects of these management actions within the Gorge segment would vary by the action. Educational measures are expected to result in local, short- and long-term, negligible, beneficial effects. More restrictive measures, such as limiting activities near the river, reducing activity levels, or restricting automobile or bus access to Yosemite Valley, would benefit the natural setting and reduce traffic congestion, and could result in short- or long-term, beneficial impacts to visitors' ability to observe scenery. The effect of the restrictions would depend on the duration of the restrictions and whether the restrictions were selective in terms of areas and activities or were more broad-based, such as an overall reduction in the number of visitors allowed through the park entrance stations. Short-term, selective restrictions would result in local, short-term, negligible to minor, beneficial effects on visitors' ability to experience scenic resources. Site-hardening activities, such as the construction of boardwalks, picnic facilities, or roadway improvements, could result in some adverse effects on the natural environment, but would be limited to areas designated for higher levels of development and use (zones 2D and 3C). New or improved site design would follow the Yosemite Valley design guidelines. Because these guidelines require consideration of significant views in all new design, site hardening would result in local, long-term, negligible, beneficial effects to scenic resources in these areas.

Overall, the implementation of VERP monitoring and subsequent management actions would have local, long-term, negligible, beneficial impacts on scenic resources from reduced traffic and crowding and reduced impacts to the natural environment. Management actions that achieve these goals through education and site hardening would have long-term, negligible, beneficial effects on scenic resources. Management actions that are more restrictive could have local, short- or long-term, negligible, beneficial effects on scenic resources.

Impacts in El Portal. Scenic resources in the El Portal segment of the river corridor consist of views of the geologic transition between granite and metasedimentary bedrock along the canyon walls and distinct views of Chinquapin Fall.

Under Alternative 3, the boundary for the El Portal segment of the river is a quarter-mile. Zoning for the El Portal segment under this alternative calls for Park Operations and Administration (3C) north of the river, and low-intensity Discovery (2B) for the majority of the undeveloped areas south of the river. The proposed boundary and zoning for the El Portal segment would likely result in additional development or redevelopment within the 3C zone. This increased development north of the river could change the foreground views and decrease visibility of important scenic resources. Any additional development is expected to result in a local, long-term, minor, adverse effect on scenic resources within the El Portal segment. Implementation of the wider river corridor boundary in El Portal would reduce development potential in this area compared to Alternative 1. Therefore, Alternative 3 would result in a local, long-term, minor, beneficial impact to scenic resources compared to Alternative 1.

Implementation of a daily segment limit for El Portal would have negligible effects on scenic resources in the short term because visitor use of this area is limited. Future growth in and use of the El Portal segment could result in measures to restrict visitor use to the adopted limit, such as removing parking areas or closing access to certain areas. Implementation of these types of

measures to restrict or reduce use would result in local, long-term, negligible, beneficial effects on scenic resources compared to the No Action Alternative.

Implementation of the VERP program within the El Portal segment would include monitoring of the indicators identified for areas zoned Discovery (2B), Day Use (2C), and Park Operations and Administration (3C).

The effects of management actions would vary by the action. Educating visitors and employees to change their behavior related to activities that could adversely affect vegetation and water quality would likely result in local, long-term, negligible, beneficial effects on scenic resources. More restrictive measures (such as limiting activities near the river or reducing activity levels) would result in a negligible, beneficial effect on scenic resources. The duration and the intensity of this effect would depend on whether the restrictions are short or long term and selective or broad-based. Conversely, these same measures could result in a local, long-term, negligible, adverse effect if they hinder visitors' ability to experience scenic resources. New or improved site design would follow the Yosemite Valley design guidelines. Therefore, site hardening (e.g., the construction of parking or picnic facilities, increased employee housing, or increased development in the town center) could have local, negligible, long-term, adverse effects on scenic resources in this area.

Impacts in Wawona. The scenic ORVs for the Wawona segments include views from the Merced River and its banks of large pothole pools within slickrock cascades, old-growth forest, meadows, Wawona Dome, and continual whitewater cascades in the deep and narrow river canyon below Wawona.

Implementation of a daily segment limit for Wawona is expected to have negligible effects on scenic resources in the short term. If future visitor use levels in Wawona reached the daily segment limit, park management would take actions to restrict or reduce visitor use levels to meet the proposed limit. Visitor use could be decreased by reducing parking, requiring reservations, or limiting the overall number of visitors through the South Entrance Station. These measures could have local, long-term, negligible, beneficial effects on scenic resources compared to the No Action Alternative.

Implementation of the VERP program throughout the Wawona segments would result in management actions to address conditions that do not meet the standards set for each zone. These management actions could range from less restrictive measures, such as education and site hardening, to more restrictive actions to reduce visitor activities or access in certain areas. The intensity of the measures taken would depend on the condition of the resources and the zoning of the area.

The Wawona segments would primarily be zoned for low-intensity visitor use, with very limited areas zoned for higher intensity uses. Therefore, management actions taken in response to VERP monitoring would likely focus on more restrictive measures. Educational efforts in response to monitoring of natural resource and social conditions would result in local, long-term, negligible benefits to scenic resources by improving the natural environment. More restrictive measures, such as restrictions on activities or use levels in various areas, would result in negligible, beneficial effects on scenic resources due to a decrease in development.

In the river corridor below Wawona, which is zoned for Undeveloped Open Space (zone 2A+), VERP management actions would likely focus on education and more restrictive measures to reduce visitor use levels and restore natural resources. Site hardening would not be appropriate in this zone. Measures to reduce the number of visitors and impacts to natural resources would have long-term, negligible to minor, beneficial effects on scenic resources. More restrictive measures, such as enforcing limits on the number of visitors accessing the Below Wawona segment, would benefit the scenic ORVs by creating an improved natural environment.

Summary of Alternative 3 Impacts. Compliance with existing park policies, including the Yosemite Valley design guidelines, would help ensure that the scenic ORVs in the Wilderness, Yosemite Valley, Gorge, and Wawona segments are being protected and enhanced. Implementation of daily segment limits and VERP management actions is expected to improve natural and social conditions within the Merced River corridor. Improvements to the natural setting and reduced crowding and congestion would provide long-term, minor, beneficial impacts on scenic resources within the corridor. Implementation of the wider river corridor boundary in El Portal would reduce development potential in this area compared to Alternative 1. Therefore, Alternative 3 would result in a local, long-term, minor, beneficial impact to scenic resources compared to Alternative 1.

Cumulative Impacts

Cumulative impacts from past, present, and reasonably foreseeable future actions in conjunction with Alternative 3 would be the same as described for Alternative 1. Overall, these cumulative actions, in combination with Alternative 3, could have a net long-term, minor, adverse impact on scenic resources and the scenic ORVs within the Merced River corridor.

Impairment

Alternative 3 is expected to result in long-term, minor, beneficial impacts on scenic resources. Therefore, Alternative 3 would not be expected to impair the scenic ORVs for future generations.

Socioeconomics

Social Environment

Analysis

Under Alternative 3, the park would supplement existing user capacity program elements with corridorwide employee limits and a VERP program. (The social environments would not be affected by the visitor limits.) Social environments within the river corridor could be affected by changes in employee housing in the developed areas and by changes in commute times to park duty stations. Under Alternative 3, the river corridor boundary for the El Portal segment would be a quarter-mile wide.

Impacts in Wilderness. There are limited facilities in wilderness areas, and few employees are stationed in these areas. The corridorwide employee limit would not likely affect the level of employees housed or stationed in wilderness areas. Depending on the management actions taken under VERP, there is a potential for the number of employees in wilderness areas to increase or decrease from current levels depending upon if measures are taken to reduce visitor use or increase enforcement and education. Due to the small number of employees and facilities in wilderness areas, these potential increases or decreases would likely result in a local, long-term, negligible, adverse impact on the social environment in wilderness areas.

Impacts in Yosemite Valley. Implementation of corridorwide employee limits would allow for the reallocation of employees within the corridor to address visitor demands and housing needs. Since the *General Management Plan* calls for a reduction of administrative facilities in Yosemite Valley, employee housing would potentially decrease in the Valley and be redistributed within the corridor. This would result in local, long-term, minor to moderate, beneficial effects on housing in the Valley from reduced crowding, but would also result in local, long-term, minor to moderate, adverse effects related to increased commutes to the Valley from other areas.

Implementation of a VERP program in Yosemite Valley under Alternative 3 would have the same effects described under Alternative 2. The effects of potential management actions in the Valley would vary by the action taken. Actions designed to reallocate employee housing from the Valley could result in a local, long-term, minor to moderate, beneficial effect on the social environment by reducing crowding. Commute times for Valley employees relocated outside the Valley, would increase, resulting in a local, long-term, minor to moderate, adverse effect. Restrictions on the use of areas or on activities in various areas could reduce recreation opportunities for Valley residents. However, because Valley residents have access to a broad range of recreation activities, these restrictions would likely result in a local, long-term, negligible to minor, adverse effect on recreation opportunities.

Overall, implementation of Alternative 3 could result in local, long-term, minor to moderate, beneficial effect on employees remaining housed in the Valley and local, long-term, minor to moderate, adverse effects on employees relocated outside the Valley.

Impacts in El Portal. Implementation of a corridorwide employee limit would allow for reallocation of employee housing from Yosemite Valley to El Portal, as proposed in the *General Management Plan*. An increase in employee housing could result in a local, long-term, minor to moderate, adverse effect on the social environment and community amenities depending upon the amount of housing developed.

VERP management actions could result in restrictions on certain activities within the river corridor in El Portal. As described under Alternative 2, implementation of restrictive management actions in response to VERP monitoring would likely result in local, long-term, negligible to minor, adverse impacts on recreation opportunities and employee commuting options.

The river corridor boundary under Alternative 3 is a quarter-mile wide along each side of the river within the El Portal Administrative Site. Management zoning under Alternative 3 includes areas of 3C zoning north of the river, allowing for some potential development of additional administrative facilities. Alternative 3 would allow for development of new or expanded employee residential areas in El Portal outside the river corridor, and within the corridor where the development would meet the standards of the Wild and Scenic Rivers Act. Since Alternative 3 includes more area inside the corridor than Alternative 1, it would likely result in less development in El Portal, compared to Alternative 1. Since this alternative would likely result in less development, the potential for adverse effects on community amenities would be reduced compared to Alternative 1, resulting in a local, long-term, minor to moderate, beneficial effect.

Impacts in Wawona. Implementation of a corridorwide employee limit would allow for reallocation of employee housing from Yosemite Valley to Wawona, as proposed in the *General Management Plan*. An increase in employee housing could result in a local, long-term, minor to

moderate, adverse effect on the social environment and community amenities depending upon the amount of housing developed.

VERP management actions could result in restrictions on certain activities within the river corridor in Wawona. As described under Alternative 2, implementation of restrictive management actions in response to VERP monitoring would likely result in local, long-term, negligible to minor, adverse impacts on recreation opportunities and employee commuting options.

Summary of Alternative 3 Impacts. Implementation of corridorwide employee limits would allow for relocation of employee housing from Yosemite Valley to other developed areas. This would result in local, long-term, minor to moderate, benefits on employees that remained housed in the Valley. It would also result in local, long-term, moderate to major, adverse effects on employees relocated from the Valley and on the social environments of El Portal and Wawona due to increased populations. The intensity of the effects would depend on the level of employee housing developed in each segment. The boundary and management zoning in El Portal under Alternative 3 would likely result in less housing development in El Portal, as compared to Alternative 1, resulting in a local, long-term, minor to moderate, beneficial effect. Implementation of VERP monitoring could result in management actions that would reduce or relocate employee housing within the river corridor. These changes could result in local, long-term, minor to moderate, adverse effects on the social environment through population changes and increased commutes for relocated employees. The intensity of the effects would depend on the amount of housing relocated and where replacement housing is sited. Potential adverse effects on recreation opportunities within the corridor communities would be negligible to minor.

Cumulative Impact

The effects of the cumulative projects on the social environment are discussed under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse effect on the social environments within the corridor due to decreases in housing and social amenities near housing and increases in commuting time in Yosemite Valley, and increases in housing in El Portal and Wawona. The impact intensity of any planning projects would depend on the extent to which the plan's recommendations are implemented.

Alternative 3 and the cumulative projects would have a local, long-term, minor to moderate, cumulative, adverse effect on the social environments within the corridor due to increases in employee housing in El Portal and Wawona and increased commuting times to Yosemite Valley. The cumulative effects associated with Alternative 3 would be partially offset, as compared to Alternative 1, due to the reduced potential for development in El Portal. The cumulative impact intensity would depend on the extent to which the cumulative projects' recommendations are implemented.

Visitor Populations

Analysis

Alternative 3 would implement maximum daily segment limits, a maximum annual visitor limit, a day use limit on hikers to Half Dome, and VERP monitoring in addition to other existing park policies regarding visitor use within the river corridor.

Proposed daily segment limits would be set near estimated existing visitor levels for each segment in the park. Therefore, impacts to visitor populations in the short term area expected to be negligible. In the long term, visitor demand is expected to increase, and future visitor levels could be constrained by the daily segment limits or by the maximum annual limit, as compared to Alternative 1. In addition, the day use limit on the trail to Half Dome could result in a decrease in visitor populations in the most popular wilderness area of the park. The effect of the proposed limits on visitor populations is expected to be regional, long-term, minor to major, and adverse compared to Alternative 1.

Implementation of VERP under Alternative 3 would have the same effects described under Alternative 2. The effects on visitor populations from management actions taken under VERP would be negligible for less restrictive measures, such as visitor education or limitations on activities in specific areas. The potential effects on visitor populations from temporary restrictions during peak periods would be local, short term, minor to moderate, and adverse. Permanent limits or restrictions are likely to result in local, long-term, moderate to major, adverse effects on visitor populations compared to Alternative 1.

Summary of Alternative 3 Impacts. Alternative 3 could result in local, long-term, minor to major, adverse effects resulting from restrictions on visitor populations related to visitor limits and implementation of VERP.

Cumulative Impacts

The effects of the cumulative projects on visitor populations are discussed under Alternative 1.

The cumulative projects would have a regional, long-term, negligible to minor, adverse impact on visitor populations due to the overall reduction in overnight accommodations in Yosemite Valley. This adverse effect would be offset somewhat by additional overnight accommodations being constructed outside the park.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a regional, long-term, minor to major, adverse cumulative impact on visitor populations due to the proposed visitor limits. Additional restrictions implemented under VERP, if needed, would increase the adverse effects.

Regional Economy

Analysis

Implementation of maximum daily segment limits, the maximum annual limit, and the day use limits for hikers to Half Dome would likely have negligible effects in the short term, since these limits are set at peak current estimated use. These limits would likely result in lower visitor levels in the park in the long term compared to Alternative 1. These lower visitation levels would likely result in lower visitor spending in communities in the region. Effects on individual area economies could be moderate, but the overall effect on the regional economy is expected to be minor. Therefore, daily segment limits could result in regional, long-term, minor, adverse effects on the regional economy.

VERP management actions that affect visitor populations, such as restrictions on specific activities, on the use of specific areas, or on the levels of day use within the river corridor would have the most effect on the regional population. The effect on the regional economy would differ depending upon the management actions taken. Temporary visitor restrictions or restrictions on

specific activities within the corridor would likely result in local, short-term, negligible to minor, beneficial effects if visitors temporarily displaced from the park spend more time in regional communities. Longer term restrictions on levels of visitor use would likely result in long-term, regional, minor, adverse effects if visitors are restrictions were placed on day use levels and therefore fewer visitors attempted to reach the park. The intensity of the effects would depend on the duration and extent of any potential restrictions or use level reductions. Other management actions that might be taken to address VERP standards include the expansion of visitor facilities or site hardening in areas zoned for intensive visitor use. These actions could result in regional, long-term, negligible, beneficial effects on the regional economy through increased construction spending and employment.

Summary of Alternative 3 Impacts. Implementation of visitor limits under Alternative 3 would likely result in regional, long-term, minor, adverse effects on the regional economy. Management actions implemented under VERP could have regional, long-term, negligible to minor, benefits to regional, long-term, minor, adverse effects depending upon the measure implemented. The effect on the regional economy would likely be long-term, minor, and adverse compared to Alternative 1.

Cumulative Impacts

The effects of the cumulative projects on the regional economy are described under Alternative 1. The cumulative projects would have a short-term, minor, beneficial effect on the regional economy, primarily due to construction spending and employment. The cumulative projects would have a long-term, negligible to minor, beneficial effect on the regional economy due to increased regional output and employment from increased overnight accommodations in the park and in local communities.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor, adverse cumulative impact on the regional economy due to the potential for long-term reductions in visitor populations compared to Alternative 1, which would reduce visitor spending in the region. This impact on the regional economy would be long term, minor, and adverse. These effects would be offset to some degree by an increase in construction employment and spending, which would have a short-term, negligible to minor, beneficial effect on the regional economy.

Concessioner

Analysis

Implementation of daily segment limits, maximum annual corridorwide visitation limits, and a day use limit for Half Dome under Alternative 3 would likely result in lower visitor levels in the park in the future compared to Alternative 1. Visitor levels would not decrease in the short term, as the limits are set at current estimated peak use levels, but future growth in visitor levels would be constrained. Since concessioner operations are directly related to visitor numbers in the park, impacts on the concessioner from the daily segment limits are expected to be local, long-term, minor to moderate, and adverse.

Implementation of VERP under Alternative 3 would have the same effects on the concessioner as described under Alternative 2. Measures taken to address VERP standards could include restrictions on specific activities (rafting, horseback riding, etc.), on the use of specific areas, or on the levels of day use within the river corridor. These restrictions could result in local, long-term, adverse effects on concessioner operations. Other management actions that might be taken to

address VERP standards include the expansion of visitor facilities in areas zoned for intensive visitor use. These actions could result in local, long-term, beneficial effects on the concessioner.

Summary of Alternative 3 Impacts. Under Alternative 3, visitor limits would result in lower visitor levels in the long term, compared to Alternative 1, resulting in a local, long-term, minor to moderate, adverse effect. Management actions taken to address VERP standards could result in restrictions on specific activities or more general restrictions on visitor levels, resulting in local, long-term, adverse effects on concessioner operations. The intensity of the effect would vary depending on the extent of the restrictions imposed. Management actions that increase visitor services could result in local, long-term, beneficial effects on concessioner operations.

Cumulative Impacts

The effects on concessioner operations from past, present and reasonably foreseeable future actions were described under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse impact on the primary park concessioner associated with locating new employee housing outside of the Valley and potential additional restrictions on activities and facilities in wilderness areas. The adverse effect would be partially offset by increased accommodations being developed in Curry Village and at Yosemite Lodge. The impact intensity of any planning projects would depend on the extent to which the *Yosemite Valley Plan's* recommendations are implemented.

Alternative 3 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse impact on the concessioner associated with locating new employee housing outside of the Valley, potential additional restrictions on activities and facilities in wilderness areas, implementation of visitor limits, and the potential for additional restrictions on visitor levels and activities in Yosemite Valley. These effects might be offset somewhat by actions that increase visitor services within some areas of the Valley.

Park Operations and Facilities

Analysis

The National Park Service is committed to the implementation of a User Capacity Management Program to protect and enhance the Merced River corridor's Outstandingly Remarkable Values. The park initiated monitoring associated with the VERP component of this program in 2004, a copy of the 2004 Annual Report is available on the park's website (www.nps.gov/yose/planning/ucmp.htm) and has secured funding for the continuation of this program through fiscal year 2008. In addition, the park has established a VERP Coordinator position and has retained a team of technical experts to assist with the development, refinement, and implementation of this program. The National Park Service is committed to implementation of this program beyond 2008 to fully comply with Wild and Scenic River's Act requirements and to achieve the goals and objectives of protecting and enhancing the Merced River corridor's Outstandingly Remarkable Values.

The following discussion provides an overview of the types of impacts to park operations, infrastructure, facilities, and energy consumption that could occur within each segment of the Merced River corridor from implementation of daily segment limits with VERP under Alternative 3. Effects on park operations from the revised corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on park operations. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to park operations associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to park operations are expected to be moderate, and adverse. Redirection of visitors could involve park staff from the Visitor and Resource Protection, Facility Maintenance, Business and Revenue Management and Interpretation and Orientation divisions during traffic management activities and get coordination with local communities and media outlets.

Impacts in Wilderness. Alternative 3 would implement daily segment limits with the VERP program in the Wilderness segments, which would include the monitoring of indicators in various management zones (see table II-5). These indicators would be monitored as an additional element of ongoing ranger patrols and other existing park operations activities in wilderness areas such as WIMS. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Wilderness segments.

The additional VERP monitoring, reporting of results to the public, and the potential management actions in Wilderness segments of the river corridor would likely increase park staff workloads. However, given the seasonal nature of visitation to wilderness areas and the limited number of wilderness visitors as a result of the existing trailhead quota system, this increase in staff workload is expected to result in a long-term, minor, adverse impact to park operations.

Wilderness areas would continue to be managed through the trailhead quota system, which has been operational for over 25 years. Therefore, it is not expected that additional park staff or new facilities would be necessary under Alternative 3.

As discussed in Chapter III, Alternative 3 calls for a day-use limit of 800 visitors per day in Little Yosemite Valley. In order to enforce this limit, park operations would be required to control access to this area by issuing day-use permits. Currently, park operations issues approximately 50 overnight permits for wilderness areas and no day-use permits. Issuing day-use permits for Little Yosemite Valley under this alternative would represent a long-term, major, adverse impact associated with wilderness permitting and enforcement operations.

Impacts in Yosemite Valley. Implementing daily segment limits with VERP in Yosemite Valley would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Valley segment.

Alternative 3 would require park management to monitor the number of visitors and/or vehicles entering and exiting the Valley and to implement management actions if the daily segment limit is exceeded. It is expected that the daily segment limits would primarily involve enforcing facility and parking capacities during periods of peak use (summer and some holidays weekends); however, this alternative would likely require additional park staff and facilities to conduct the monitoring and implement appropriate management actions.

The additional VERP monitoring, reporting of results to the public, and the potential management actions combined with implementing a daily segment limit for the Valley would

likely increase park staff workloads. It is expected that this increase in workloads would represent an overall long-term, minor to moderate, adverse impact to park operations, mostly during the summer when visitation is highest.

Impacts in the Gorge. Implementation of daily segment limits with VERP in the Gorge segment would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Gorge segment.

The Gorge segment has limited visitor and other park facilities. The additional VERP monitoring, reporting of results to the public, and the potential management actions in the Gorge segment under Alternative 3 would likely increase park staff workloads. The implementation of a daily segment limit for the Gorge segment would require additional efforts by park staff to monitor and implement management actions if the limit is exceeded. However, because there is limited visitor use during most of the year, any additional effort would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in workloads would likely result in an overall long-term, minor, adverse impact to park operations in the Gorge segment of the river corridor.

Impacts in El Portal. Implementation of Alternative 3 in the El Portal segment would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the El Portal segment.

The additional VERP monitoring, reporting of results to the public, and the potential management actions combined with implementing a daily segment limit for the El Portal segment would likely increase park staff workloads, resulting in an overall long-term, negligible to minor, adverse impact to park operations.

Under Alternative 3, the quarter-mile river boundary and management zoning in El Portal would provide approximately 399 acres zoned as Park Operations and Administration (3C). The remaining acreage in this segment would be zoned either 2B (323 acres) or 2C (131 acres). The National Park Service would be required to protect and enhance ORVs located in this segment in accordance with the Wild and Scenic Rivers Act. However, the area zoned 3C in Alternative 3 allows some flexibility within the river corridor for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries. Therefore, the river corridor boundary and zoning under this alternative would result in an overall long-term, minor to moderate, beneficial impact to park operations.

The implementation of a daily segment limit for the El Portal segment would require additional efforts by park staff to monitor and implement management actions if the limit is exceeded. Any additional effort required to implement management actions (such as restricted access policies) would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in park staff workloads would likely result in an overall long-term, minor, adverse impact to park operations.

Impacts in Wawona. Implementation of daily segment limits with VERP in the Wawona segments under park jurisdiction would include the monitoring of indicators in various management zones.

If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Wawona segments.

Additional VERP monitoring, reporting of results to the public, and potential management actions in the Wawona area under Alternative 3 would likely increase park staff workloads, resulting in an overall long-term, minor, adverse impact to park operations.

The implementation of a daily segment limit for the Wawona segments would require additional efforts by park staff to monitor and implement management actions if the limit is exceeded. Any additional effort required to implement management actions would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in park staff workloads would likely result in an overall long-term, minor, adverse impact to park operations

Park Infrastructure and Facilities

Impacts in Wilderness and the Gorge. Alternative 3 would not require changes to, or the need for, any new park infrastructure and facilities. Therefore, this alternative would not affect park infrastructure and facilities in the Wilderness and Gorge segments.

Impacts in Yosemite Valley, El Portal, and Wawona. Implementing daily segment limits with VERP under Alternative 3 could require that traffic check points and/or additional traffic monitoring equipment be put in place, particularly during periods of high use (summer and some holiday weekends). It is expected that these actions would result in a long-term, minor to moderate, adverse impact to park infrastructure and facilities, depending on the type and nature of the additional monitoring facilities.

In addition employee housing could increase in these segments, resulting in a long-term, minor, adverse impact to park infrastructure and facilities, primarily associated with additional building repair and maintenance requirements.

The quarter-mile river boundary and management zoning in El Portal under Alternative 3 would provide approximately 399 acres zoned as Park Operations and Administration (3C). The remaining acreage would be zoned either 2B (323 acres) or 2C (131 acres). There would be minimal, if any, suitable areas outside the river boundary for park infrastructure and facilities. The National Park Service would be required to protect and enhance ORVs located within the river corridor in accordance with Wild and Scenic Rivers Act. However, the area zoned 3C under Alternative 3 would provide park management with the flexibility to relocate utilities, facilities, and services to El Portal that are currently within park boundaries, which would require the removal of some infrastructure and facilities in Yosemite Valley, the design and construction of new facilities in the El Portal Administrative Site, and the removal of decommissioned facilities. These actions would represent a long-term, minor, beneficial impact to park infrastructure and facilities. However, the additional acreage within the river corridor boundary provided under Alternative 3 would likely result in an overall long-term, minor to moderate, adverse impact to park infrastructure and facilities due to the larger area contained within the corridor boundary and the restrictions that are part of the zoning requirements.

The daily segment limit in El Portal would require additional efforts by park staff to monitor and implement management actions if the limit is exceeded (over and above efforts required for VERP implementation). Any additional effort to implement management actions would typically

occur during periods of high use (summer and some holiday weekends). However, this increase in monitoring would likely result in a long-term, negligible to minor, adverse impact to park facilities and infrastructure.

Energy Consumption

Impacts in Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona. Implementation of daily segment limits with VERP under Alternative 3 is not expected to substantially increase or decrease the amount or types of energy consumed in the river corridor segments compared to Alternative 1. However, the addition of employee housing on a corridorwide basis in the El Portal, Yosemite Valley, and Wawona segments would require an increase in overall energy consumption, resulting in a long-term, minor, adverse impact compared to Alternative 1.

An overall long-term, minor, beneficial impact to energy consumption would occur related to vehicle use, as gasoline and diesel fuel consumption is expected to decline in the future due to improved fuel economy and the increased use of alternative fuels.

Summary of Alternative 3 Impacts. Implementation of daily segment limits with VERP in the Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona segments in addition to day-use limits in Little Yosemite Valley would require changes to and increase the need for new park infrastructure and facilities. Therefore, Alternative 3 would result in long-term, minor to major, adverse impacts to park operations and park infrastructure and facilities.

In El Portal, the river boundary and zoning under this alternative would result in an overall long-term, moderate, adverse impact to park operations and an overall long-term, minor to moderate, beneficial impact to park infrastructure and facilities.

Compared to Alternative 1, Alternative 3 would not increase the amount of energy consumed in the river corridor segments associated with increased employee housing within the river corridor, resulting in an overall long-term, minor, adverse impact with respect to energy consumption. However, gasoline and diesel fuel consumption associated with vehicle use is expected to decline in the future because of improved fuel economy and an increased use of alternative fuels.

Cumulative Impacts

The cumulative effects to park operations from past, present, and foreseeable future actions would be the same as described for Alternative 1. Overall, these cumulative actions, in combination with Alternative 3, could have a net long-term, minor, beneficial effect on park operations in the Merced River corridor.

Unavoidable Adverse Impacts

The following discussion identifies unavoidable adverse impacts to resources associated with implementation of Alternative 3, which consists of an established maximum daily limit for each segment of the river, a annual corridorwide limit on visitation, and implementation of the VERP program (as presented in Alternative 2). For the purposes of this document, these impacts have been identified as being unavoidable, moderate to major, and adverse.

No impacts associated with the implementation of Alternative 3 have been identified as being unavoidable, moderate to major, and adverse to natural and cultural resources. However, unavoidable adverse impacts to the visitor experience, recreation and park operations could

occur if more restrictive management actions were taken to ensure that the ORVs are protected and enhanced. Unavoidable adverse impacts could result if visitors were limited in their ability to freely move about within the segment, or restricted from entering the corridor. In addition, unavoidable adverse impacts could occur to park operations as a result of the need for additional staff and resources necessary to adequately enforce more restrictive management actions.

Irreversible and Irretrievable Commitments of Resources

This section identifies any resources that would be lost either temporarily or permanently as a result of Alternative 3. Alternative 3 consists of an established maximum daily limit for each segment of the river, a annual corridorwide limit on visitation, and implementation of the VERP program (as presented in Alternative 2).

Relocating existing facilities and/or the development of new facilities in El Portal would result in the expenditure of energy to relocate or develop the facility. In addition, relocating existing facilities and/or construction of new facilities would involve an irreversible commitment of construction-related materials, such as concrete, asphalt, wood, and metal.

Similar to Alternatives 1 and 2, energy consumption in the park will continue into the future, resulting in an irreversible and irretrievable commitment of energy sources. However, overall energy consumption is expected to decrease with time as the park converts to more efficient types of equipment, and fleet vehicle turnover occurs resulting in the use of more technically advanced and energy-efficient vehicles.

Relationship of Short-Term Uses of the Environment and Long-Term Productivity

The river corridor and management zoning associated with Alternative 3 for El Portal would allow for development of park administrative facilities within 339 acres of the 853 acres within the corridor (primarily north of the river). Potential development would occur in a manner which protects the ORVs within this management zone; however, these actions could temporarily adversely effect resources during construction. Once completed, the relocated and/or newly constructed facilities would have a long-term benefit to park operations.

Responsiveness of Alternative 3 to the Ninth Circuit Court of Appeals' Direction on the Merced River Plan

The Ninth Circuit Court of Appeals directed the National Park Service to revise the Merced River Plan to address user capacity and to draw the boundaries in the El Portal segment in a manner that protects its ORVs. In addition, the District Court for the Eastern District of California directed the National Park Service to address how the Merced River Plan would amend the 1980 *General Management Plan*.

User Capacity

In addressing user capacity, the Ninth Circuit Court of Appeals specifically directed the National Park Service to "adopt specific limits on user capacity" and that "such limits describe an actual level of visitor use that will not adversely impact the Merced's ORVs."

Alternative 3 includes each of the specific measurable limits on types and levels of use that are included within Alternative 1 (with the exception of the *General Management Plan* visitor capacities), as well as a daily maximum visitor limit by segment, a maximum daily employee limit by corridor, and a maximum annual visitation limit for the river segment, in addition to implementation of the VERP program. These daily segment limits would amend the existing daily visitor capacity limits adopted in the *General Management Plan*.

Management of Wilderness segments would continue under the existing wilderness trailhead quota system (1,280 overnight visitors in Yosemite wilderness areas) and WIMS, with the addition of the VERP program. Under Alternative 3, the National Park Service would also implement a day use limit for hikers on the trail to Half Dome. This limit would be set at 800, which represents an estimate of current peak day use of this trail.

The daily maximum visitor limit by segment under Alternative 3 would limit visitor numbers in each segment. Visitor numbers would be monitored based on parking and traffic data in Yosemite Valley, and based on surveys of parking during peak periods in other areas. Visitor numbers would be limited to 16,680 day visitors in Yosemite Valley and 7,699 overnight visitors, for a total daily limit of 24,379. The daily segment limit for the Gorge would be 2,958 and for El Portal would be 1,144. These daily limits address only day visitors because there are no overnight facilities on National Park Service lands in these segments. The maximum daily visitor limit for Wawona would include 2,839 day visitors and 897 overnight visitors, for a segment total of 3,736. These segment numbers would amend the visitor numbers for developed areas currently adopted in the *General Management Plan*.

The maximum annual visitor limit of 5.32 million for the river corridor would be set at a level that ensures that the maximum daily limits would not be met on most days of the year. The corridorwide limit on employees would include a limit of 1,969 employees housed in the corridor and include 703 nonresident employees who commute to a work station in the corridor.

Under Alternative 3, the National Park Service would also implement a VERP program. Under the VERP program, the National Park Service has adopted a host of indicators (measured variables) and standards (measured values) that reflect the qualitative conditions for the management zones in quantitative form. The standards have been set at levels designed to protect and enhance ORVs (see table II-5). The standards are scientifically measurable limits, and the standards will be measured through a monitoring program designed for each specific indicator. The standards provide clear, documented triggers for management action. If a standard is being met, management action is not required. If conditions are declining (but have not yet fallen below a set standard), management action could be taken to improve the condition and forestall continued decline. If monitoring indicates that conditions do not meet established standards, management action must be taken. Table II-3 presents a list of the types of management actions that can be taken to address conditions documented through the VERP program. VERP data would be used to ensure that the adopted limits are adequate to protect and enhance the ORVs. If adopted standards are not being met, visitor levels could be restricted beyond the adopted limits described above.

Alternative 3 provides specific measurable limits on daily and annual visitor numbers and on employees within the corridor. In addition, the VERP program included in this alternative, along with the existing user capacity measures from the No Action Alternative, will provide an adequate array of specific, measurable limits on types and levels of use to ensure that the river's ORVs are

being protected and enhanced. As a result, this alternative complies with the Court direction requiring specific, measurable limits on user capacity.

El Portal Boundary

The Court directed that the National Park Service "redetermine the river area boundaries at El Portal" and that these boundaries "must be drawn so as to protect and enhance the ORVs causing that area to be included within the Wild and Scenic River System." In response to this direction from the court, the National Park Service gathered data on ORVs in El Portal, and used this data to inform the width of the boundaries and the zoning applied within those boundaries.

In El Portal, Alternative 3 proposes a quarter-mile river corridor boundary. This wide boundary would result in a similar corridor width to the other river segments on National Park Service lands. The proposed zoning under this alternative would allow development of park administrative facilities within the corridor (in selected areas primarily north of the river), if development can be completed in a manner which protects the ORVs. Undeveloped areas south of the river are primarily zoned 2B (Discovery). This places substantial limits on the types of development that could occur there. Park administrative uses and most visitor facilities could not be developed in 2B areas.

The additional data gathered on the location of ORVs together with the more restrictive zoning across a larger portion of the El Portal Administrative Site provide for the protection of ORVs. Further, all facility development proposed within the El Portal Administrative Site would undergo environmental compliance review, which would require the proposed development to be consistent with all of the elements of the Merced River Plan, including the protection and enhancement of ORVs.

The proposed boundary under Alternative 3 meets the Court direction to redraw the boundary so as to protect the ORVs for this segment of the river.

Amendments to the 1980 *General Management Plan*

The Wild and Scenic Rivers Act requires the managing agencies to prepare comprehensive management plans for the river and its immediate environment. The Merced River Plan, as revised by this document, provides direction on these issues for the 81 miles of the Merced Wild and Scenic River under the jurisdiction of the National Park Service.

Congress further authorized the National Park Service to prepare its management plan for the river by making appropriate revisions to the park's 1980 *General Management Plan* (16 USC 1274[a][62]). The Wild and Scenic Rivers Act generally provides that river management plans "shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands" (16 USC 1274).

While it is not the policy of the National Park Service retroactively to revise existing plans, Section 1274(a)(62) of the Wild and Scenic Rivers Act requires that the *General Management Plan* be revised to meet the requirements of section 1274(b). Accordingly, the Merced River Plan adopted in November 2000 resulted in the following amendments to the *General Management Plan*. The Merced River Plan's management zoning, River Protection Overlay, river corridor boundaries

(with the exception of the El Portal segment) and classifications, and the ORVs revise the *General Management Plan* by establishing more detailed land-use prescriptions that must be applied in future site-specific planning. The Merced River Plan's Section 7 determination process and is a tool that augments the goals of the *General Management Plan*. If selected, this alternative further revises the *General Management Plan* by adopting new boundaries and management zoning for the El Portal area and by adopting a VERP program. No development or use of park lands in the areas within the river corridor shall be undertaken that is inconsistent with the Wild and Scenic Rivers Act designation of the Merced River, or that is inconsistent with the Merced River Plan, as revised by the Revised Merced River Plan/SEIS.

General Management Plan Goals

The *General Management Plan* establishes five broad goals for managing Yosemite National Park (NPS 1980a, pp. 1-4). Although the *General Management Plan* is over 20 years old, its goals are still valid today and apply to the management of the Merced River corridor under the Merced River Plan. The Merced River Plan and this revision work in concert with the goals set forth in the *General Management Plan*, and outline an additional set of specific goals for management of the Merced Wild and Scenic River (MRP pp. 23-24). The Merced River Plan's five goals were developed to further the policy established by the Wild and Scenic Rivers Act, namely to preserve designated rivers in their free-flowing condition, and protect and enhance the river's ORVs. The five defining goals of the *General Management Plan* and the five goals of the Merced River Plan are intertwined, and no one goal can be emphasized to the complete exclusion of the others.

General Management Plan Management Objectives

The *General Management Plan* sets forth a number of Management Objectives that guide resource management, visitor use, and park operations (NPS 1980a, pp. 5-10). The elements of the Merced River Plan, including the revisions made by this alternative, provide an added level of detailed guidance to park managers on how to achieve management objectives for the park. Those elements are boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and VERP. For example, projects within each river segment or must protect and enhance ORVs and be consistent with the other elements of the Merced River Plan. Projects adjacent to the river corridor must protect ORVs, and depending on location, may need to undergo a Section 7 review if they affect the bed or banks of the river.

General Management Plan Land Management Zoning

The *General Management Plan* (GMP pp. 10-13) specifies several land management zones, including a Development Zone. The management zones described in the Merced River Plan and the management zones proposed for the El Portal segment for Alternative 3 as illustrated in figure III-3, replace the Management Zoning Plan of the *General Management Plan* for those areas within the Merced Wild and Scenic River corridor boundaries. Zoning of areas outside the river corridor boundary remains unchanged; however, development and uses in areas adjacent to the river corridor must be protective of ORVs, as provided for in the Merced River Plan.

General Management Plan Visitor Use

When the *General Management Plan* was developed in 1980, the estimated visitor capacity of Yosemite Valley was 26,406 per day. As shown in table II-5, the *General Management Plan* called for these visitation levels to be reduced to 18,241 per day through relocation of facilities from Yosemite Valley. Implementation of daily segment limits and a corridorwide annual corridorwide visitation limit as shown in table III-8 would amend the visitor capacity goals of the *General*

Management Plan by increasing the day visitation level to 24,379 and by placing an annual visitation limit of 5.32 million visitors. In addition, Alternative 3 increases employee housing levels above *General Management Plan* proposed levels by 10%. Adoption of this alternative would amend the long-term visitor capacity goals adopted in the *General Management Plan*.

In addition, the VERP program has the ability to reduce visitation levels below the proposed daily segment and annual corridorwide limits. If data collected as a result of monitoring show that the conditions of Outstandingly Remarkable Values and the visitor experience are exceeding set standards, appropriate management actions (which could include reduced visitation levels) would be taken to reduce visitation levels below the limits proposed in Alternative 3.

General Management Plan Developed Area Plans

The *General Management Plan* (GMP pp. 31-59) contains Developed Area Plans for areas within and adjacent to the river corridor. Development Concepts for areas within the river corridor must comply with the management elements of the Merced River Plan, (boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and the park's user capacity management program). In the case of El Portal, the new boundaries and management zoning for this alternative would amend the *General Management Plan*'s development concept for El Portal. To the extent that any Development Concept is less restrictive than the Merced River Plan, the Merced River Plan as revised by this plan controls. Actions adjacent to the river corridor but outside of the river boundary must also protect ORVs.

Table V-4 provides a summary of how this alternative affects the ORVs for each segment of the Merced River corridor.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
	MAIN STEM MERCED RIVER SEGMENTS	
1. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 3 would not affect the amount of the watershed which is within designated Wilderness. Alternative 3 would continue use of the trailhead quota system, along with implementation of VERP, to manage visitor use in designated Wilderness. These measures would protect the natural, cultural and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment includes views from the river and its banks of the glaciated river canyon, exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of the canyon, the riverbed, cascades, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment traverses a U-shaped, glacially carved canyon separated by cascades and soda springs below Washburn Lake.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 3.
	Recreation – This segment provides outstanding opportunities for solitude along the river, with primitive and unconfined recreation. There is a spectrum of levels of recreational use. River-related recreational opportunities include day hiking, backpacking, horseback riding and packing, camping, and enjoyment of natural river sounds. Untrailed tributaries provide enhanced opportunities for solitude.	*Recreation* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system along with VERP. Under Alternative 3, VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. A spectrum of river-related recreational opportunities would continue to be available to wilderness visitors.
	Biological – This segment includes a nearly full range of intact Sierran riverine environments; high-quality riparian, meadow, and aquatic habitats (such as the meadow at Washburn Lake), and special-status species such as mountain yellow-legged frog.	*Biological* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect the biological resources from visitor use-related impacts.
	Cultural – This segment includes portions of a prehistoric trans-Sierra route in use for thousands of years and many prehistoric sites. There are many historic resources such as homestead sites, trails, river crossings, High Sierra Camp sites, and structures.	*Cultural* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.
	Hydrologic Processes – The segment is characterized by a free-flowing river and excellent water quality. The river gradient drops from 13,000 to 6,000 feet in elevation. There are examples of natural conditions, including glacial remnants, a logjam in Little Yosemite Valley that is hundreds of years old, and numerous cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character or its gradient, glacial remnants or cascades. Water quality in wilderness areas would be protected under Alternative 3 through existing limits on visitor use in wilderness and through implementation of VERP with monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Main Stem-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wilderness segment by managing development or uses in wilderness areas that would adversely affect the segment's ORVs.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
2. Yosemite Valley	*Scenic* – This segment provides magnificent views from the river and its banks of waterfalls (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, Bridalveil, and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rock, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil). There is a scenic interface of river, rock, meadow, and forest throughout the segment.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of waterfalls and rock cliffs from the river and its banks. Implementation of Alternative 3 would protect and enhance the scenic views of meadows through daily segment limits limiting visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts in meadows.
	Geologic Processes/Conditions – This segment contains a classic, glaciated, U-shaped valley, providing important examples of a mature meandering river; hanging valleys such as Yosemite and Bridalveil Creeks; and evidence of glaciation (e.g., moraines below El Capitan and Bridalveil Meadows).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 3.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking. Yosemite Valley is one of the premier outdoor recreation areas in the world.	*Recreation* – Implementation of Alternative 3 would protect and enhance recreation in the Valley through management of visitor use levels through daily segment limits, and management actions taken under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of river-related recreational opportunities.
	Biological – Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for a diversity of river-related species, including special-status species, neotropical migrant songbirds, and numerous bat species.	*Biological* – Implementation of Alternative 3 would protect and enhance low-elevation meadows, wetlands, riparian areas and other riverine areas through management of visitor use levels through daily segment limits, and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains evidence of thousands of years of human occupation reflected in a large number of archeological sites and continuing traditional use today. Nationally significant historic resources are found here, such as designed landscapes and developed areas, historic buildings, and circulation systems (trails, roads, and bridges) that provide visitor access to the sublime views of natural features that are culturally valuable.	*Cultural* – Implementation of Alternative 3 would protect and enhance cultural resources through management of visitor use levels through daily segment limits, and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a meandering river, world-renowned waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes.	*Hydrologic Processes* – Visitor use would not affect the Valley's spectacular waterfalls or the river's meandering character, flood regime, or fluvial processes. Implementation of Alternative 3 would protect and enhance wetlands through management of visitor use levels through daily segment limits and implementation of management actions under VERP, as needed, to address visitor-related impacts on wetland areas.
Yosemite Valley Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Yosemite Valley segment by managing development or uses that would adversely affect the segment's ORVs.
3. Gorge[a]	*Scenic* – This segment provides views from the river and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of the Cascades, rapids, waterfalls, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment is characterized by a classic V-shaped river gorge with a continuous steep gradient.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 3.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
	Recreation – This segment provides a spectrum of river-related recreational opportunities, such as picnicking, fishing, photography, and sightseeing.	*Recreation* – Implementation of Alternative 3 would protect and enhance recreation in the Gorge by managing visitor use levels through daily segment limits and implementing management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas and associated special-status species that are largely intact and almost entirely undisturbed by humans.	*Biological* – Implementation of Alternative 3 would protect and enhance the diverse riparian areas and their associated special-status species by managing visitor use levels through daily segment limits and implementing specific management actions under VERP, as needed, to address visitor-related impacts on riparian areas and related species.
	Cultural – This segment contains cultural resources, including prehistoric sites and historic sites and structures such as those relating to historic engineering projects.	*Cultural* – Implementation of Alternative 3 would protect and enhance cultural resources by managing visitor use levels through daily segment limits, and by implementing management actions under VERP, as needed, to address visitor-related impacts.
	Hydrologic Processes – This segment is characterized by exceptionally steep gradients (2,000-foot elevation drop in approximately 6 miles).	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 3.
Gorge Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Gorge segment by managing development or uses that would adversely affect the segment's ORVs.
4. El Portal	*Geologic Processes/Conditions* – This segment contains a transition from igneous to metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, or to the proposed corridor boundary and management zoning for El Portal, and would not be affected by Alternative 3.
	Recreation – This segment provides a range of river-related recreational opportunities, in particular whitewater rafting and kayaking (class III to V) and fishing.	*Recreation* – Implementation of Alternative 3 would protect and enhance recreation in El Portal through adoption of daily segment limits to manage visitor use levels in El Portal and implementation of specific management actions, as needed, to address visitor experience conditions. The proposed El Portal boundary and the management zoning proposed would not affect access to the spectrum of recreational opportunities.
	Biological – This segment contains riverine habitats such as riparian woodlands and associated federal and state special-status species, including Tompkin's sedge and Valley elderberry longhorn beetle and its critical habitat (elderberry shrub). Expanses of north-facing habitat allow unlimited access to the riparian zone for wildlife species.	*Biological* – Implementation of Alternative 3 would protect and enhance these biological resources through adoption of daily segment limits to manage visitor use levels in El Portal, implementation of specific management actions taken under VERP, as needed, to address visitor-related impacts, and implementation of the proposed boundary and zoning.
	Cultural – This segment contains some of the oldest archeological sites in the Yosemite area, as well as many historic Indian villages and traditional gathering places. River-related historic resources include structures related to early tourism and industrial development.	*Cultural* – Implementation of Alternative 3 would protect and enhance cultural resources through implementation of a boundary that incorporates cultural resources within a quarter-mile of the river. In addition, use of daily segment limits to manage visitor use levels and implementation of management actions under VERP, as needed, to address visitor-related impacts, would protect and enhance cultural resources.
	Hydrologic Processes – This segment is characterized by seasonally continuous rapids.	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts and would not be affected by Alternative 3.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
El Portal Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the El Portal segment by managing development or uses that would adversely affect the ORVs of the segment.
	SOUTH FORK MERCED RIVER SEGMENTS	
5. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 3 would not affect the amount of the watershed which is within designated Wilderness. Alternative 3 would continue use of the trailhead quota system, along with implementation of VERP, to manage visitor use in designated Wilderness. This would protect the natural, cultural, and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment provides views from the river and its banks of unique river features, including large pothole pools within slickrock cascades, old growth forest, and meadows.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of pothole pools within slickrock cascades or old growth forest. Under Alternative 3, daily segment limits would limit visitor use of wilderness areas based on existing wilderness trailhead quotas and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Geologic Processes/Conditions – This segment is characterized by glaciated valleys in the high country and V-shaped canyons above Wawona. Moraine meadows and soda springs above Gravelly Ford are also unique, river-related geologic features.	*Geologic Processes/Conditions* – Most of these geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 3. Under Alternative 3, daily segment limits would limits visitor use of wilderness areas based on existing trailhead quotas, and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation. This segment of the river is predominantly without trails, with the exception of four bridgeless trail crossings in the upper reaches of the segment.	*Recreation* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under the existing trailhead quota system along with VERP. VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. Visitors would continue to have access to outstanding river-related recreational opportunities.
	Biological – This segment includes a nearly full range of riverine environments typical of the Sierra Nevada. Examples of river-related federal and state special-status species include the Wawona riffle beetle and mountain yellow-legged frog.	*Biological* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect the riverine communities and special-status species from visitor use-related impacts.
	Cultural – This segment includes river-related prehistoric sites and resources and reflects historic stock use and cavalry activities.	*Cultural* – Under Alternative 3, visitor use of wilderness areas would continue to be managed under existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
	Hydrologic Processes – This segment is characterized by a free-flowing river and excellent water quality.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character. Water quality in wilderness areas would be protected under Alternative 3 through daily segment limits that are based on existing trailhead quotas and that limit visitor use in wilderness. In addition, VERP would include monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
South Fork-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the South Fork Wilderness segment by managing development or uses that would adversely affect the segment's ORVs.
6. Impoundment[b]	*Scenic* – This segment provides views from the river and its banks of the river and Wawona Dome.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of the river or Wawona Dome.
	Hydrologic Processes – This segment has excellent water quality.	*Hydrologic Processes* – Water quality would be protected under Alternative 3 through implementation of daily segment limits and VERP, which would include monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Impoundment Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Impoundment segment by managing development or uses that would adversely affect the segment's ORVs.
7. Wawona	*Scenic* – This segment provides views from the river and its banks of Wawona Dome.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of the river or Wawona Dome.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and photography to hiking.	*Recreation* – Implementation of Alternative 3 would protect and enhance recreation in Wawona through adoption of daily segment limits to limit visitor use and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of river-related recreation opportunities.
	Biological – This segment contains a diversity of river-related species, wetlands, and riparian habitats. There are federal and state special-status species in this segment, including the Wawona riffle beetle.	*Biological* – Implementation of Alternative 3 would protect and enhance wetlands, riparian habitats, and special-status species through adoption of daily segment limits to limit visitor use levels and management actions taken under VERP, as needed, to address visitor-related impacts to sensitive vegetation or species.
	Cultural – This segment contains evidence of thousands of years of human occupation, including numerous prehistoric and historic Indian villages, historic sites, structures, and landscape features related to tourism, early Army and National Park Service administration, and homesteading.	*Cultural* – Implementation of Alternative 3 would protect and enhance cultural resources through adoption of daily segment limits to limit visitor use levels and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.

Table V-4
Effect of Alternative 3 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 3 on the ORVs
Wawona Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wawona segment by managing development or uses that would adversely affect the segment's ORVs.
8. Below Wawona	*Scenic* – This segment provides views from the river and its banks of continual whitewater cascades in the deep and narrow river canyon in a untrailed, undisturbed environment.	*Scenic* – Implementation of Alternative 3 would not affect the scenic views of whitewater cascades or untrailed, undisturbed environment.
	Geologic Processes/Conditions – This segment contains a transition from Paleozoic Era igneous to Cretaceous Period metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 3.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities include hiking, fishing, and whitewater kayaking.	*Recreation* – Implementation of Alternative 3 would protect and enhance recreation in the Wawona through adoption of daily segment limits to limit visitor use levels, and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to outstanding river-related recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas that are intact and largely undisturbed by humans. River-related federal and state special-status species in this segment include the Wawona riffle beetle.	*Biological* – Implementation of Alternative 3 would protect riparian areas and special-status species through adoption of daily segment limits to limit visitor use levels, and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains archeological sites and historic resources such as trail segments representing early cavalry activity.	*Cultural* – Implementation of Alternative 3 would protect and enhance cultural resources through adoption of daily segment limits to limit visitor use levels and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a free-flowing river with continual whitewater cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character and whitewater cascades.
Below Wawona-Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Below Wawona segment by managing development or uses that would adversely affect the segment's ORVs.

NOTES:
a The Cascades Diversion Dam was removed in 2004. The segment that was formerly designated as 3a has been combined with the segment formally designated 3b and this entire area forms segment 3.
b The Impoundment would become part of segment 7, Wawona, if an alternative water source for the area was secured and the impoundment was removed.

Alternative 4: Management Zone Limits with VERP

The environmental consequences analysis for this alternative addresses elements of the user capacity program for the entire Merced River corridor and the river corridor boundary as well as associated management zone prescriptions for the El Portal segment specific to Alternative 4. It does not provide an analysis of impacts that may be associated with elements of the park's existing user capacity programs as identified in Alternative 1. Similarly, this analysis does not address other existing management elements for the Merced River corridor that were previously described and analyzed in the Merced River Plan/FEIS.

Natural Resources

Geology, Geohazards, and Soils

Analysis

The following discussion provides an overview of the types of impacts that could occur under Alternative 4 with respect to rockfall hazards, seismic hazards, and soils.

Rockfall Hazards. Under Alternative 4, rockfall hazards would remain essentially the same as described for Alternative 1, with the possible exception that (1) established user limits under management zone limits could result in fewer visitors being exposed to rockfall hazards in certain areas of the river corridor and (2) management actions taken in response to indicators unrelated to rockfall hazard under the VERP program with management zone limits could reduce the number of users exposed to rockfall hazards in some areas. However, the effects of either of these potential exceptions on rockfall hazard impacts would be negligible. Existing park policies regarding geohazards would continue to be implemented, and, in the near term, visitation levels would be similar to existing levels under Alternative 1. In addition to current management programs and policies, the management zone limits and VERP program implemented under Alternative 4 provide for management actions that would be triggered to achieve or maintain established standards. Some of these management actions would have the effect of limiting users in some areas. This would, in turn, result in somewhat fewer users exposed to rockfall hazards, and therefore would be a minor, beneficial effect of this alternative.

Seismic Hazards. Potential seismic hazards in the Merced River corridor would be the same under Alternative 4 as described for Alternative 1.

As described for Alternative 1, current park policies regarding geologic hazards would continue to be implemented. The VERP program and management zone limits under Alternative 4, in addition to current management programs and policies, provide for specific user limits and management actions that would be triggered to achieve or maintain established standards. The combination of management zone limits and VERP management actions would have the effect of limiting users in some areas. This would, in turn, result in fewer users exposed to earthquake ground shaking hazards, and therefore would be a minor, beneficial effect of this alternative.

Impacts to Soils. Under Alternative 4, as under Alternatives 1, 2 and 3, soils along most of the river corridor would remain relatively undisturbed and uncompacted. The VERP program component of Alternative 4 would be the same as described under Alternative 2. Although only one of these indicators is explicitly concerned with soil erosion, the indicators related to intensity of visitor use and effects of visitor use on vegetation also reflect impacts on soils, and the standard associated

with each indicator would provide a management tool that also could protect soils from excess compaction and erosion. Similarly, management zone limits would help prevent erosion or compaction impacts by concentrating visitor use in some areas. Until the VERP program is fully operational, it might not be apparent what effect management zone limits have on the frequency with which management actions would be triggered by VERP monitoring.

Management actions associated with the redirection of visitors from compacted soils in sensitive areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Under Alternative 4, users could continue to affect soils by contributing to erosion, soil compaction, and removal of surface soils. Excessive surface water runoff or loss of protective vegetation cover could cause erosion. Compaction of native soils could occur through concentrated visitor use in localized areas or excessive vehicle traffic in unpaved areas. In the long term, compared to Alternative 1, Alternative 4 would reduce adverse impacts to soils within the river corridor.

The boundary for the El Portal segment of the river under Alternative 4 is based on the location of the ORVs. The zoning under Alternative 4 is the most restrictive of the alternatives for the El Portal segment of the river. The area south of the river and west of the Abbieville levee would be zoned Discovery (2B), except for portions of the Trailer Village/Abbieville area, which would be zoned for Park Operations and Administration (3C). East of the levee, the area south of the river eastward to the El Portal Administrative Site boundary would be zoned Open Space (2A). The area north of the river and east of Crane Creek would be zoned Discovery (2B), except for existing developed areas at Railroad Flat, Rancheria Flat, Old El Portal, and the undeveloped Middle Road area, which would be zoned Park Operations and Administration (3C). Because much of the area that would be zoned Park Operations and Administration (3C) is already developed, only limited future construction of administrative facilities would occur under this alternative. As with Alternative 1, however, any future construction of administration facilities that would occur under this boundary and zoning could cause erosion of exposed soil. Temporary construction-related erosion could occur during periods of rain while soil is exposed, and prior to the site restoration and cleanup phases of future projects. As described under Alternative 1, impacts associated with construction-period soil erosion and sedimentation would be mitigated through mitigation measures described in Appendix B and would result in a local, short-term, minor adverse impact. Long-term soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Therefore, relative to Alternative 1, Alternative 4 would have similar effects on soil erosion from future construction activities at the El Portal Administrative Site. Open Space (2A) zoning to the El Portal Administrative Site boundary for most of the area south of the river would reduce impacts related to soil erosion and compaction compared with Alternative 1. Implementation of the VERP program and management zone limits, in conjunction with the proposed El Portal boundary and zoning, would ensure that management actions would be taken to achieve or maintain established standards with respect to trails, riverbank erosion, vegetation, and other indicators. Thus, Alternative 4 would result in local, long-term, minor, beneficial impact on soil resources.

Summary of Alternative 4 Impacts. In the short term, impacts related to rockfall and seismic hazards would be unchanged from Alternative 1 because the number of users exposed to these hazards would be approximately the same. Compared to Alternative 1, Alternative 4 would have a minor, beneficial impact on public safety associated with seismic hazards in the long-term. Compared to Alternative 1, Alternative 4 would have similar effects on soil erosion from future construction at the El Portal Administrative Site. However, efforts to protect biological and recreation ORVs through implementation of the VERP program, including management actions taken to achieve the identified standards, and application of specified user limits in different management zones of the river would have a long-term, minor, beneficial impact on soil resources. The combined adverse and beneficial impacts to soil resources under Alternative 4, compared with Alternative 1, would be long term, minor, and beneficial.

Alternative 4 would continue to enhance and protect the identified geologic processes/conditions ORVs within the individual river segments.

Cumulative Impacts

Cumulative impacts related to geological resources, geohazards, and soil resources under Alternative 4 would be the same as described for Alternative 1. Although rockfall and earthquakes are unpredictable and unavoidable by nature, rockfall and earthquake hazards under Alternative 4 and the cumulative projects would result in a local, long-term, minor, beneficial impact to public safety in Yosemite National Park and the El Portal Administrative Site. The beneficial impact would be due to the smaller increase in long-term visitation levels under management zone limits and implementation of the VERP program and to efforts by the National Park Service to relocate critical facilities outside the talus and rockfall shadow zones, to avoid construction of new facilities in these hazard areas, and to conduct appropriate geotechnical studies prior to construction of facilities on soils susceptible to seismic ground shaking. The cumulative projects, in combination with Alternative 4, would result in a net regional, long-term, minor, beneficial impact on soil resources.

Impairment

Compared with Alternative 1, Alternative 4 would have a local, long-term, minor, beneficial impact on geologic resources and soils. Therefore, Alternative 4 would not impair geologic resources for future generations.

Hydrology, Floodplains, and Water Quality

Analysis

The following discussion provides an overview of the types of impacts to hydrology, floodplains, and water quality that could occur within each segment of the Merced River corridor under Alternative 4.

Management actions associated with the redirection of visitors from floodplains and adjacent areas and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. The hydrologic processes ORV in the Wilderness segments (both the main stem and South Fork segments) of the river is characterized the river's free-flowing condition and excellent water quality. The ORV description also notes the river gradient, the natural conditions (e.g., glacial remnants, a logjam in Little Yosemite Valley), and numerous cascades. Of the qualities described in the ORV, most are relatively insensitive to user-related impacts, with the exception of water quality. Water quality in Wilderness segments is considered to be excellent.

User capacity within wilderness areas of Yosemite National Park (including those portions within the Wilderness segments) is addressed through the trailhead quota system and monitoring of wilderness resource conditions. Similar to Alternatives 2 and 3, implementation of the VERP program for the Wilderness segments would result in additional monitoring of indicators within Wilderness management areas. VERP indicators to be monitored in wilderness zones are listed in table II-5.

Indicators have been selected to provide overall information on the health of resources within the wilderness areas. Information on the numbers of people recreating within the river corridor, and the River Protection Overlay in particular, can provide indirect information on the potential for increased erosion and sedimentation. Water quality monitoring would help determine the effects of visitor use on water quality in areas zoned Designated Overnight (1D). The water quality standard for this area includes nondegradation of fecal coliform (which must also meet the state standard for recreational contact), nutrients (compounds of nitrogen and phosphorous), and total petroleum hydrocarbons. If these water quality standards are not met, management actions would be implemented to improve water quality parameters to a level that meets the established standard and protects and enhances the hydrologic processes ORV.

The removal of up to 3,000 gallons of water per day from the Merced River to support functions at the Merced Lake High Sierra Camp during the summer (when this camp is open to the public) represents a negligible impact to the river's hydrologic processes at or downstream of the point of withdrawal. This negligible impact would be due to the small daily withdrawal volume compared to daily flow volumes in this segment of the river corridor.

The VERP program under Alternative 4 would be the same as described under Alternatives 2 and 3. Educational efforts would be expected to result in local, short- and long-term, negligible to minor, beneficial impacts on hydrology and water quality. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects due to reduced trampling of vegetation by people and stock, reduced soil compaction, and reduced waste loads. These actions would be expected to result in local, long-term, minor to moderate, beneficial impacts on hydrology and water quality. Finally, measures taken to close and/or restore areas would be expected to result in local, long-term, minor to moderate, beneficial effects on water resources associated with restoration of vegetative cover, reduced soil compaction, and reduced erosion.

In wilderness areas, few structures are permitted to be constructed, and Alternative 4 would not affect the floodplain or its ability to accommodate flood flow.

VERP monitoring in conjunction with actively managing the number of people entering the different management zones within the Wilderness segments of the river corridor would provide an additional level of protection for the hydrologic processes ORV. If VERP monitoring indicates that the hydrologic processes ORV is being protected and enhanced, it is expected that the park

management would maintain the trailhead quota system as it is currently being implemented. However, if VERP monitoring indicates that the hydrologic ORV is not being protected and enhanced, then management actions would be implemented to reduce the number of people allowed to enter wilderness (i.e., reduce the trailhead quotas as needed) to an appropriate level until subsequent monitoring indicates that the hydrologic ORV is being protected and enhanced. Under no circumstances would the National Park Service be able to increase the existing trailhead quota for wilderness areas, regardless of the monitoring results within each management zone.

Actively managing the number of visitors allowed into each management zone within the Wilderness segments of the river corridor would provide park management with the tools to ensure that the hydrologic processes ORV would be protected and enhanced. The continued implementation of the existing trailhead quota system is expected to result in local, long-term, negligible to minor, beneficial impacts on hydrology, water quality, and the hydrologic processes ORV.

Impacts in Yosemite Valley. The hydrologic processes ORV in Yosemite Valley include the river's meandering character, world-class waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes. Many of these qualities are insensitive to user-related impacts and would be more directly affected by development within the floodplain. User-related impacts could affect wetlands and other vegetation within the river corridor, which could result in the loss of vegetative cover, and increased erosion and sedimentation. In addition, visitor use of the river and use of camping and parking areas near the river could result in increased water pollution through stormwater runoff and other means.

The VERP program under Alternative 4 would be the same as described under Alternatives 2 and 3. Educational measures designed to change visitor behaviors in ways that reduce vegetation trampling, riverbank erosion, and water pollution is expected to result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures would reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate, benefits to hydrology and water quality. Site-hardening activities could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. The long-term effects associated with boardwalks is expected to be local, minor to moderate, and beneficial due to reduced trampling in sensitive vegetated areas and reduced impacts to surface and groundwater hydrology related to the creation of social trails, compacted soils, and trampled vegetation in riverside areas. Construction of picnic areas or other day-use facilities is also expected to reduce ongoing trampling and water pollution, but could have long-term effects related to soil compaction and vegetative losses. Thus, the long-term benefits of these facilities on water resources is expected to be negligible to minor. Floodplains and their ability to accommodate flood flows would not be substantively affected by most management actions. Construction of boardwalks or other day-use facilities would be required to comply with floodplain guidance and would have local, long-term, negligible, adverse effects on floodplains.

Overall, implementation of the VERP program and appropriate management actions based on monitoring results, and the implementation of specific limits for each management zone in the Valley could add an incremental level of protection for the hydrologic processes ORV over that

provided by the VERP program alone (Alternative 2) or by the VERP program coupled with daily segment limits (Alternative 3). However, this additional protection is expected to be relatively small. Implementation of the VERP program and specific capacity limits for each management zone in the Valley would help prevent visitor use from adversely affecting floodplain values, riverbanks, and the river. This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the Valley. Impacts on floodplains are expected to be negligible.

Impacts in the Gorge. The hydrologic processes ORV for the Gorge segment is related to the steep gradient of the river. This ORV is not readily susceptible to user-related impacts.

Implementation of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures would reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor, benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term, minor to moderate benefits to hydrology and water quality. Site-hardening activities would be considered only within areas zoned Attraction (2D) or Park Operations and Administration (3C). Site hardening, such as construction of parking or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. However, these facilities would be located in areas designated for higher intensity uses and would likely reduce the unofficial use of areas designated for less-intensive use. Therefore, the long-term effects associated with site improvements are expected to be local, minor, and beneficial.

The implementation of a limit for each management zone in the Gorge segment is expected to have a negligible to minor, beneficial effect on the hydrologic processes ORV. Overall, implementation of the VERP program through monitoring of indicators for each zone, the implementation of appropriate management actions based on monitoring results, and the implementation of specific capacity limits for each management zone would limit the number of visitors able to stop and enjoy the river in the Gorge. This would provide an incremental level of protection for the hydrologic processes ORV over that provided by the VERP program alone (Alternative 2) or by the VERP program with daily segment limits (Alternative 3). This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the Gorge segment. Impacts on floodplains are expected to be negligible.

Impacts in El Portal. The hydrologic processes ORV in the El Portal segment is related to the continuous rapids in that segment. This ORV is not readily affected by the definition of the river corridor boundary, the zoning plan, or visitor use.

Alternative 4 would provide the most restrictive zoning for this segment of the river and include 404 acres of Open Space (2A), 277 acres of Discovery (2B), and only 132 acres designated for Park Operations and Administration (3C). The proposed boundary and zoning for the El Portal segment would likely result in additional development or redevelopment within the areas zoned 3C. This could result in a loss of vegetation, soil compaction and/or paving, with the potential for increased erosion and increased runoff from developed areas, thereby resulting in local, long-term, minor, adverse effects on hydrology and water quality. In addition, some development could occur within the floodplain, resulting in a local, long-term, minor, adverse effect on floodplain values. These minor, adverse effects would be minimized through careful site design;

Best Management Practices to limit vegetation loss, soil compaction, and erosion; and implementation of appropriate stormwater treatment measures.

Implementation of VERP under Alternative 4 would be the same as described under Alternatives 2 and 3. Educational measures are expected to result in local, short- and long-term, negligible to minor, beneficial effects, as described above. More restrictive measures are expected to reduce the loss of vegetative cover, soil compaction, soil erosion, and water pollution, resulting in local, short- and long-term, minor benefits to hydrology and water quality. Closure and restoration of riparian areas is expected to result in local, long-term minor to moderate benefits to hydrology and water quality. Site hardening would be considered only in areas zoned Park Operations and Administration (3C). Site hardening, such as construction of parking or picnic facilities, could have local, short-term, adverse effects related to soil disturbance, soil compaction, and erosion and sedimentation associated with construction activities. However, these facilities would be located in areas designated for higher intensity uses and are expected to reduce the unofficial use of areas designated for less intensive use. Therefore, the long-term effects associated with site improvements are expected to be local, minor, and beneficial. Effects on floodplains would primarily be related to construction activities within the floodplain. Since these activities would be expected to comply with floodplain requirements, effects on floodplains and the ability to accommodate flood flow is expected to be adverse but negligible.

The implementation of a limit for each management zone in the El Portal Administrative Site is expected to have a negligible to minor, beneficial effect on the hydrologic processes ORV. Overall, Alternative 4 would limit the number of visitors able to stop and enjoy the river in this area. This would provide an incremental level of protection for the hydrologic processes ORV over that provided by the VERP program alone (Alternative 2) or by the VERP program with daily segment limits (Alternative 3). This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the El Portal area. Impacts on floodplains along the south side of the river are expected to be long term, minor to moderate, and beneficial.

Impacts in Wawona. The impoundment near Wawona is described as having excellent water quality, a hydrologic processes ORV. The Wawona segments themselves do not represent a hydrologic processes ORV, but the Below Wawona segment includes the free-flowing condition of the river and continual whitewater cascades, which are ORVs. The water quality element of the impoundment segment is the most susceptible to user-related impacts.

Typical management actions that might be taken under VERP have been described above. In general, the less restrictive measures would have short- and long-term, negligible to minor, beneficial impacts. More restrictive measures are expected to result in long-term, minor to moderate benefits. Management actions that include construction could have local, short-term, minor adverse effects on hydrology and water quality and long-term, negligible, adverse effects on floodplains. These activities would be designed to reduce effects on sensitive areas within the segment, and thus would be expected to have long-term, minor beneficial effects.

The implementation of a limit for each management zone in the Wawona segments is expected to have a negligible to minor beneficial effect on the hydrologic processes ORV. Overall, implementation of the VERP program through monitoring of indicators for each zone, the implementation of appropriate management actions based on monitoring results, and the implementation of specific capacity limits for each management zone would limit the number of visitors able to stop and enjoy the river in this area. This would provide an incremental level of

protection for the hydrologic processes ORV over that provided by the VERP program alone (Alternative 2) or by the VERP program with daily segment limits (Alternative 3). This would result in a long-term, minor, beneficial impact to hydrology, water quality, and hydrologic processes in the Wawona area. Impacts on floodplains are expected to be negligible.

Overall, Alternative 4 is expected to have local, long-term, negligible to minor benefits to hydrology, water quality and the hydrologic processes ORV in the Wawona, Below Wawona and Impoundment segments. Adverse effects to floodplains from any construction activities would be local, long term, and negligible.

Summary of Alternative 4 Impacts

Overall, implementation of the VERP program, based on the management zoning developed in the Merced River Plan and specific limits for each management zone, would result in a long-term, minor, beneficial impact on hydrology, water quality, and hydrologic processes within the river corridor and a long-term, negligible, adverse effect on floodplains. The above, coupled with existing park management policies and elements in the existing Merced River Plan, would help to ensure that the individual elements of the hydrologic processes ORV are being protected and enhanced on a segment-by-segment basis throughout the Merced River corridor.

Cumulative Impacts

Cumulative effects to hydrology, floodplains, and water quality were described under Alternative 1.

Overall, past, present and reasonably foreseeable cumulative actions, in combination with Alternative 4, could have long-term, minor, beneficial effects on hydrology, floodplains, and water quality in the Merced River corridor.

Impairment

Alternative 4 would provide long-term, minor, beneficial impacts to water quality, floodplain values, and hydrologic processes in the Merced River corridor. As a result, Alternative 4 would not impair the hydrologic resources of the park for future generations.

Wetlands

Analysis

The following discussion provides an overview of the types of impacts to wetland resources that could occur within each segment of the Merced River corridor under Alternative 4. As described in detail in Chapter III, this alternative would manage user capacity in the river corridor by limiting the number of park visitors and employees allowed within each management zone and would provide a limit on maximum annual visitation to the park. Management actions under this alternative would be aimed at reducing the number of people in any management zone that exceeds its designated capacity limit, and managing visitation so that it does not exceed the annual maximum limit.

Under Alternative 4, establishment of management zone–based limits would allow park management to take actions to reduce visitor levels within each management zone if limits for a zone were exceeded, regardless of whether specific visitor-related impacts had been identified. This alternative would also provide an annual maximum limit on park visitation. A user capacity

program based on an annual maximum limit and management zone limits would provide a mechanism for limiting the numbers of visitor by management zone if limits were exceeded.

In addition to the management zone limits, this alternative would also implement a VERP program, as described under Alternative 2. The VERP program would provide long-term tools for the protection of natural resources within the river corridor. Without systematic monitoring, such as that provided under the VERP program, allowable park use increases could have local, long-term, adverse effects on wetland resources, particularly in the vicinity of facilities and areas of concentrated use. However, an annual maximum visitor limit and management zone limits, in combination with VERP monitoring, could result in beneficial effects on wetland resources by, for example, limiting the number of people in each management zone or parkwide, or locating facility- and use-related impacts away from more sensitive areas.

Management actions associated with the redirection of visitors from wetlands and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 4, user capacity in the Wilderness segments of Yosemite National Park would be addressed through annual corridorwide visitation limits on park visitation. In addition, management zoning limits would result in the continued implementation of the trailhead quota system, which would serve to limit use to existing levels. Enforcement of wilderness limits could also be increased. Maintenance of existing use levels is expected to have a beneficial effect on wetlands and the biological ORVs in the Wilderness segments compared to Alternative 1.

As under Alternative 2, implementation of the VERP in wilderness areas would result in data that would inform future management decisions. Management actions implemented in response to VERP monitoring under Alternative 4 would have a local, long-term, minor, beneficial impact on wetlands.

The impacts of management actions implemented under Alternative 4 as a result of the VERP program would vary depending on the type of action taken. As under Alternative 2, low-intensity management responses, such as educational efforts would likely result in local, long-term, negligible to minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas, would likely result in local, long-term, minor, beneficial effects on wilderness wetlands and the biological ORVs for the Wilderness segments of the Merced River.

Under Alternative 4, the implementation of an annual maximum visitor limit and user capacity limits by management zone, in addition to the VERP program within Wilderness segments, would have an overall long-term, minor, beneficial effect on wetlands and the biological ORVs in wilderness areas compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 4, user capacity in Yosemite Valley would be addressed through the establishment of an annual maximum limit on park visitation and user

capacity limits specific to each management zone within the Valley segment of the river corridor. VERP monitoring would result in management actions aimed at reducing the number of park users if the Valley limits were exceeded. Potential management actions to reduce the number of people in the Valley are described in Chapter II. Implementation of management zone limits for the Valley is expected to result in beneficial effects on wetlands and the biological ORVs compared to the No Action Alternative.

Implementation of the VERP program in the Valley would result in resource-specific data on the condition of resources and visitor experience that would inform future management decisions. VERP indicators have been selected to provide overall information on the health of resources throughout the river corridor and are described in Chapter II. Management actions implemented in response to VERP monitoring are the same as those described for Alternative 2. The impacts of management actions implemented in the Valley as a result of the VERP program would vary depending on the type of action taken. Alternative 4 would have an overall long-term, minor to moderate, beneficial effect on wetlands and the biological ORVs in the Yosemite Valley segment compared to Alternative 1.

Impacts in the Gorge. Under Alternative 4, user capacity in the Gorge segment would be addressed through the establishment of an annual maximum limit on park visitation and user capacity limits specific to the management zones within the Gorge segment of the river corridor. Monitoring would result in specific management actions aimed at reducing the number of park users if the parkwide limits or management zone limits were exceeded. Potential management actions to reduce the number of people in the Gorge segment include eliminating formal and informal parking areas, removing picnic areas, and requiring permits for use of the area. Limits would be based closely on existing use. Therefore, implementation of management zone limits for the Gorge segment is expected to have beneficial effects on wetlands and the biological ORVs compared to the No Action Alternative.

Data obtained through the implementation of VERP monitoring in the Gorge segment would result in data that would guide future management decisions. Impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken and could range from negligible to minor, beneficial effects. Alternative 4 would have an overall long-term, minor, beneficial effect on wetlands and the biological ORVs in the Gorge segment compared to Alternative 1.

Impacts in El Portal. Under Alternative 4, user capacity in the El Portal segment of the Merced River corridor would be addressed through the establishment of an annual maximum limit on park visitation and user capacity limits specific to each management zone within the El Portal river corridor boundary. Monitoring would result in specific management actions aimed at reducing the number of park users if the annual limit or management zone limits were exceeded. Potential management actions are the same as those described for Alternative 3. Therefore, implementation of management zone limits for the El Portal segment are expected to have a beneficial effect on wetlands and the biological ORVs compared to the No Action Alternative.

Under Alternative 4, the river corridor boundary would closely delineate the ORVs along the El Portal segment of the river. A total of 814 acres would be included within the river corridor boundary at El Portal. The revised El Portal river corridor boundary under this alternative is expected to have a local, long-term, minor to moderate, beneficial effect on wetland resources in the El Portal segment compared to Alternative 1, because the corridor area would be increased.

Compared to Alternative 1, Alternative 4 would include more restrictive management zoning for much of the area south of the river. The area south of the river and west of the Abbieville levee would be primarily zoned Discovery (2B), except for a portion of the existing Trailer Village/Abbieville area, which would be zoned for Park Operations and Administration (3C). The remainder of the area within the El Portal Administrative Site, east of the Abbieville levee, would be zoned Open Space (2A), which calls for relatively undisturbed natural areas with only incidental or casual use and very limited facilities. Most undeveloped areas north of the river would be zoned Discovery (2B). Existing developed areas north of the river would be zoned for Park Operations and Administration (3C). This zoning would be more restrictive with respect to the development of park administrative facilities (allowing such uses on only 16% of lands within the riparian corridor compared to 29% under Alternative 1) as well as other types of development. Under this zoning, Alternative 4 would provide 132 acres for Park Operations and Administration (3C), 277 acres for Discovery (2B), and 404 acres would be zoned Open Space (2A).

Portions of El Portal would be zoned 3C (e.g., the Trailer Village, Old El Portal), which allows redevelopment as well as additional development (e.g., employee residences located in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., fire suppression in the vicinity of structures), minor to moderate, adverse effects on wetlands. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to wetlands (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.

It should be noted that all ORVs must be protected regardless of the zoning or whether or not they occur within or outside of the river corridor boundary. In addition, the implementation of VERP monitoring in El Portal would result in data that would guide future management decisions regarding wetland resources in this segment. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken, ranging from minor to moderate, beneficial effects on wetlands and the biological ORVs for the El Portal segment.

Local, short- and long-term, moderate, adverse effects to wetlands could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new parking facilities and employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 4 by the application of zoning within the larger, revised river corridor boundary (as compared to Alternative 1). The revised boundary would require the application of a consistent set of criteria and considerations (as described under the Alternative 1 analysis) to a larger area and the implementation of the VERP program within the El Portal segment.

The application of the revised El Portal river corridor boundary under this alternative is expected to have a local, long-term, minor to moderate, beneficial effect on wetland resources in the El Portal segment compared to Alternative 1, as the corridor area would be increased. Alternative 4 would therefore have an overall local, long-term, minor to moderate, beneficial effect on native wetlands and the biological ORVs in the El Portal segment compared to Alternative 1.

Impacts in Wawona. Under Alternative 4, user capacity in the Wawona segments would be addressed through the establishment of an annual maximum limit on park visitation and user capacity limits specific to the management zones within the Wawona segments of the river

corridor. Monitoring would result in specific management actions aimed at reducing the number of park users if the management zone limits were exceeded. Potential management actions to reduce the number of people in the Wawona segments are described in Chapter II. Implementation of management zone limits that maintain existing levels of use for the Wawona segments would likely have a beneficial effect on wetland and the biological ORVs compared to the No Action Alternative.

Implementation of VERP monitoring in the Wawona segment would result in data that would guide future management decisions. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational signage or brochures, could decrease impacts from visitor use by changing behavior in ways that would reduce the trampling of wetlands, creation of social trails, as well as erosion. Education efforts would likely result in local, long-term, minor, beneficial effects on wetland resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas or restoring wetlands affected by social trails or eroded riverbanks, would likely result in local, long-term, moderate, beneficial effects on wetlands and the biological ORVs for the Wawona segments.

Overall, Alternative 4 would have a long-term, minor to moderate, beneficial impact on wetlands and the biological ORVs in the Wawona segment.

Summary of Alternative 4 Impacts. Implementation of an annual maximum limit on Park visitation would likely result in long-term, beneficial impacts to wetlands compared to Alternative 1. Implementation of management zone limits would require park management to limit the number of people using specific segments of the park. Management zone limits reduce user levels and would thus have a beneficial effect on wetlands compared to Alternative 1, which could allow use levels to rise throughout the park. The implementation of VERP monitoring would inform management planning and drive the implementation of actions designed to protect wetland resources and the biological ORVs, thus resulting in beneficial effects. The revised El Portal river corridor boundary would allow for the application of these management elements to a much greater area than that described in Alternative 1. Overall, Alternative 4 would have local, short- and long-term, minor to moderate, beneficial effects on wetlands and the biological ORVs. In addition, compliance with existing park policies would help ensure that the biological ORVs related to wetlands are protected and enhanced.

Cumulative Impacts

Cumulative effects to wetlands would be the same as described for Alternative 1. Past, present, and reasonably foreseeable future cumulative actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wetlands and wetland-related ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 4, could have a net local, long-term, minor, beneficial effect on parkwide wetlands and the biological ORVs of the Merced River corridor.

Impairment

Alternative 4 would have a local, long-term, minor to moderate, beneficial effect on parkwide wetlands as well as the biological ORVs of the Merced River corridor and therefore would not impair wetland resources for future generations.

Vegetation

Analysis

The following discussion provides an overview of the types of impacts to vegetation resources that could occur within each segment of the Merced River corridor under Alternative 4. This alternative would manage user capacity in the river corridor by implementing an annual maximum limit on park visitation and by limiting the number of park visitors and employees allowed within each management zone. Management actions under this alternative would be aimed at reducing the number of people in any management zone that exceeds its designated user capacity limit and managing visitation so that it does not exceed the annual maximum limit.

Under Alternative 4, establishment of management zone–based limits would allow park management to take actions to reduce visitor levels within each management zone if limits for a zone were exceeded. This alternative would also provide an annual maximum limit on park visitation. A user capacity program based on an annual maximum limit and management zone limits would provide a mechanism for limiting the number of visitors by management zone if limits were exceeded. In addition to the management zone limits, Alternative 4 would implement the VERP program, as described for Alternative 2. The VERP program would provide long-term tools for the protection of natural resources within the river corridor. Allowable park use increases could have local, long-term, adverse effects on vegetation resources, particularly in the vicinity of facilities and areas of concentrated use. However, management zone limits and an annual maximum visitor limit, in combination with VERP monitoring, could result in beneficial effects on vegetation resources by, for example, limiting the number of users in each management zone.

Management actions associated with the redirection of visitors from areas with sensitive vegetation and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 4, user capacity in the Wilderness segments of the Merced River corridor would be addressed through implementation of annual corridorwide visitation limits on park visitation. In addition, the application of management zone user capacity limits would result in the continued implementation of the existing trailhead quota system, which would limit visitor use to existing levels. Enforcement of trailhead quotas could also be increased. Alternative 4 would be expected to have a beneficial effect on vegetation and the biological ORVs in the Wilderness segments compared to Alternative 1.

As under Alternative 2, implementation of the VERP program with management zone limits in wilderness areas would result in data that would inform future management decisions. Management actions implemented in response to VERP monitoring under Alternative 4 would have a local, long-term, minor, beneficial impact on vegetation.

The impacts of management actions implemented under Alternative 4 as a result of VERP monitoring would vary depending on the type of action taken. As under Alternative 2, low-intensity management responses, such as educational efforts, would likely result in local, long-

term, negligible to minor, beneficial effects on vegetation resources. Higher intensity management responses, such as temporarily or permanently closing highly degraded or sensitive areas, would be expected to result in local, long-term, minor, beneficial effects on wilderness vegetation and the biological ORVs for the Wilderness segments of the Merced River.

Under Alternative 4, the implementation of an annual maximum visitor limit and limits by management zone, in addition to the VERP program within Wilderness segments, would have an overall long-term, minor, beneficial effect on native vegetation and the biological ORVs in wilderness areas compared to Alternative 1.

Impacts in Yosemite Valley. Under Alternative 4, user capacity in Yosemite Valley would be addressed through the establishment of an annual maximum limit on park visitation and limits specific to each management zone within the Valley segment of the river corridor. VERP monitoring could result in management actions being implemented to reduce the number of park users if the limits were exceeded. Implementation of management zone limits would likely result in beneficial effects on vegetation and the biological ORVs in the Valley compared to the No Action Alternative.

Implementation of the VERP program with management zone limits in the Valley would provide resource-specific data on the condition of resources that would inform future management decisions. Indicators and standards have been selected to provide overall information on the health of resources throughout the river corridor (see table II-5). Management actions implemented in response to data obtained through VERP monitoring would be the same as those described under Alternative 2. The impacts of management actions in the Valley as a result of the VERP program would vary depending on the type of action taken. Alternative 4 would have an overall long-term, minor to moderate, beneficial effect on native vegetation and biological ORVs in the Valley segment compared to Alternative 1.

Impacts in the Gorge. Under Alternative 4, user capacity in the Gorge segment would be addressed through the establishment of an annual maximum limit on park visitation and user capacity limits specific to the management zones within the Gorge segment of the river corridor. Monitoring could result in specific management actions being implemented to reduce the number of users if the parkwide limits or management zone limits were exceeded. Potential management actions to reduce the number of visitors in the Gorge segment include eliminating formal and informal parking areas, removing picnic areas, and requiring permits for use of the area. Implementation of management zone limits in the Gorge segment would likely have beneficial effects on vegetation and the biological ORVs compared to the No Action Alternative.

Data obtained from the implementation of VERP monitoring in the Gorge segment would guide future management decisions. Impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken and could range from negligible to minor, beneficial effects. Alternative 4 would have an overall long-term, minor, beneficial effect on native vegetation and the biological ORVs in the Gorge segment compared to Alternative 1.

Impacts in El Portal. Under Alternative 4, user capacity in the El Portal segment of the river corridor would be addressed through the establishment of an annual maximum limit on park visitation and user capacity limits specific to each management zone within the El Portal river corridor boundary. Monitoring would result in specific management actions aimed at reducing the number of park users if the annual limit or management zone limits were exceeded. Potential

management actions would be the same as those described for Alternative 3. Management zone limits in the El Portal segment are expected to have a beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

Under Alternative 4, the river corridor boundary would closely delineate the ORVs along the El Portal segment of the river. A total of 814 acres would be within the river corridor boundary at El Portal. The revised El Portal river corridor boundary under this alternative are expected to have a local, long-term, minor to moderate, beneficial effect on vegetation and the biological ORVs in the El Portal segment compared to Alternative 1 because the corridor area would be increased.

Compared to Alternative 1, Alternative 4 includes more restrictive management zoning for much of the area south of the river. The area south of the river and west of the Abbieville levee would be primarily zoned Discovery (2B), except for a portion of the existing Trailer Village/Abbieville area, which would be zoned for Park Operations and Administration (3C). The remainder of the area within the El Portal Administrative Site, east of the Abbieville levee, would be zoned Open Space (2A), which calls for relatively undisturbed natural areas with only incidental or casual use and very limited facilities. Most undeveloped areas north of the river would be zoned 2B. Existing developed areas north of the river would be zoned 3C. This alternative would be more restrictive with respect to development of park administrative facilities (allowing such uses on only 16% of lands within the riparian corridor boundary compared to 29% under Alternative 1) as well as other types of development. Under this zoning, Alternative 4 would provide 132 acres for Park Operations and Administration (3C), 277 acres for Discovery (2B), and 404 acres for Open Space (2A).

Portions of El Portal would be zoned 3C (e.g., the Trailer Village, Old El Portal), which allows redevelopment as well as additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term and long-term, minor to moderate, adverse effects on native vegetation. Although application of mitigation measures (see Appendix B) would reduce impacts, long-term, minor to moderate, adverse effects to native vegetation (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.

It should be noted that all ORVs must be protected regardless of the management zoning designation or whether or not the ORVs occur within or outside of the river corridor boundary. In addition, the implementation of VERP monitoring in El Portal would result in data that would guide future management decisions regarding vegetation resources in this segment. The impacts of management actions implemented as a result of the VERP program with management zone Limits would vary depending on the type of action taken, ranging from minor to moderate, beneficial effects on vegetation and the biological ORVs for the El Portal segment.

Local, short- and long-term, moderate, adverse effects to native vegetation could occur as the result of future actions that could be implemented under the proposed zoning (e.g., new employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 4 by the application of zoning within the larger, revised river corridor boundary (as compared to Alternative 1). The revised boundary would require the application of a consistent set of criteria and considerations (as described under the Alternative 1 analysis) to a larger area and the implementation of the VERP program within the El Portal segment.

The application of the revised El Portal river corridor boundary under this alternative is expected to have a local, long-term minor to moderate, beneficial effect on vegetation resources in the El Portal segment compared to Alternative 1. Alternative 4 would therefore have an overall local, long-term, minor to moderate, beneficial effect on native vegetation and the biological ORVs in the El Portal segment compared to Alternative 1.

Impacts in Wawona. Under Alternative 4, user capacity in the Wawona segments would be addressed through the establishment of an annual maximum limit on park visitation and management zone limits within the river corridor. Monitoring would result in specific management actions aimed at reducing the number of users if the limits were exceeded. Implementation of management zone limits for the Wawona segments would likely have a beneficial effect on vegetation and the biological ORVs compared to the No Action Alternative.

Implementation of VERP monitoring in the Wawona segment would provide data to guide future management decisions. The impacts of management actions implemented as a result of the VERP program would vary depending on the type of action taken. Low-intensity management responses, such as educational signage or brochures, might reduce impacts from visitor use by changing behavior to reduce the trampling of vegetation, use of social trails, and erosion. Education efforts would likely result in local, long-term, minor, beneficial effects on vegetation resources. Higher intensity management responses, such as restoring vegetation to social trails or eroded riverbanks, would likely result in local, long-term, moderate, beneficial effects on vegetation and the biological ORVs in the Wawona segments.

Overall, Alternative 4 would have a long-term, minor to moderate, beneficial impact on native vegetation and the biological ORVs in the Wawona segments.

Summary of Alternative 4 Impacts. Implementation of an annual maximum limit on park visitation would likely result in long-term, beneficial impacts to vegetation compared to Alternative 1, which has no such mechanism to limit visitation. Implementation of management zone limits would allow park management to limit visitor levels in specific areas of the river corridor. Management zone limits would have a beneficial effect on vegetation compared to Alternative 1. VERP monitoring would inform management planning and drive the implementation of actions designed to protect vegetation resources and the biological ORVs, thus resulting in beneficial effects. The revised El Portal river corridor boundary would allow for the application of these management elements to a much greater area than that described in Alternative 1. Overall, Alternative 4 would have local, short- and long-term, minor to moderate, beneficial effects on vegetation and the biological ORVs. Additionally, compliance with existing park policies would help ensure that the biological ORVs related to vegetation are protected and enhanced.

Cumulative Impacts

Cumulative impacts on vegetation under Alternative 4 would be the same as those identified and described under Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on vegetation and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 4, could have a net local, long-term, minor, beneficial effect on parkwide vegetation and the biological ORVs of the Merced River corridor.

Impairment

Alternative 4 would have a local, long-term, minor to moderate, beneficial effect on parkwide vegetation as well as the biological ORVs of the Merced River corridor and therefore would not impair vegetation resources for future generations.

Wildlife

Analysis

The following discussion provides an overview of the types of impacts to wildlife resources and the biological ORVs that could occur within each segment of the Merced River corridor under Alternative 4. Under Alternative 4, management zone limits would limit the number of park visitors in each management zone. In the short term under Alternative 4, visitor numbers are expected to be similar to those under Alternative 1. Long-term, beneficial impacts to wildlife would occur through implementation of management zone limits and VERP monitoring and management actions that would limit use of the corridor at a level that would protect wildlife resources and the biological ORVs.

Management actions associated with the redirection of visitors from areas with sensitive wildlife habitat and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 4, user capacity in the Wilderness segments of Yosemite National Park would continue to be addressed through implementation of the trailhead quota system and monitoring programs. Existing quotas based on resource protection goals currently restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows and impacts to associated wildlife species. Under this alternative, management would have the capacity to reduce limits as needed. The reduction of limits in response to VERP monitoring would likely result in local, short- and long-term, minor, beneficial effects on wildlife resources. Alternative 4 would also include implementation of the VERP program in wilderness areas. Implementation of VERP under Alternative 4 would be the same as described for Alternative 2. Management actions such as visitor education would be expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced wilderness trailhead quotas, and closure of areas would likely result in local, short- and long-term, negligible to minor, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Due to the seasonal nature of visitation to Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the trailhead quota system, implementation of the VERP program with user limits by management zone and subsequent management actions overall would likely have local, short- and long-term, negligible to minor, beneficial impacts to wildlife resources and the biological ORVs in wilderness areas.

Impacts in Yosemite Valley. As described above, Alternative 4 would include implementation of the VERP program as well as management zone user capacity limits that would limit the number of users in each management zone of the river corridor within Yosemite Valley. The user capacity program would result in additional resource-specific monitoring of indicators within this area. Implementation of VERP under Alternative 4 would be the same as described for Alternative 2.

The impacts of management actions implemented as a result of VERP monitoring and user limits by management zone would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of trail restrictions, and closure of areas would likely result in local, short- and long-term, minor to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human wildlife conflicts.

Alternative 4 would implement management zone limits for each management zone in addition to the VERP program, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 4 would provide protection for native wildlife and the biological ORVs in Yosemite Valley and would result in a net local, short- and long-term, moderate, beneficial effect.

Impacts in the Gorge. Under Alternative 4, user capacity in the Gorge segment would be addressed through establishment of a user-capacity limit specific to the established management zones within the Gorge segment of the river corridor. VERP monitoring would provide data on the condition of wildlife resources that would guide future wildlife management and visitor experience decisions. VERP management actions would be aimed at reducing the number of park users if the management zone limits were to be exceeded. Potential management actions to reduce visitation in the Gorge segment include eliminating formal and informal parking areas, removing picnic areas, and requiring permits for use of the area. Implementation of management zone limits for the Gorge segment is expected to have a local, minor to moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

The impacts of management actions implemented as a result of VERP monitoring with user limits by management zone would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor, beneficial impact. Implementation of a permit reservation system for picnic areas, increased enforcement of food storage restrictions, and closure of areas would likely result in local, short- and long-term, minor to moderate, beneficial impacts to wildlife resources by reducing trampling, erosion, social trails, human disturbance to wildlife, and human/wildlife conflicts.

Alternative 4 would implement the VERP program and limits for each management zone which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 4 would have a local, short- and long-term, minor to moderate, beneficial effect on native wildlife and the biological ORVs within the Gorge segment.

Impacts in El Portal. Under Alternative 4, the river corridor boundary within El Portal would include nearly all of the biological ORVs of the El Portal segment of the Merced River within the El Portal Administrative Site. The boundary would include the full reaches of Crane Creek and most other tributaries to the Merced River and associated riverine habitats, and habitat south of the Merced River within the El Portal Administrative Site. Alternative 4 would designate low-intensity zoning (2A and 2B) for the majority of the area south of the river and higher intensity zoning (3C) in limited areas in the vicinity of existing development areas. In addition, Alternative 4 also designates several other smaller areas north of the river, such as Crane Creek and adjacent riparian habitat to the east, as lower intensity zoning (2B).

Examples of how management zoning would affect native wildlife and wildlife-related biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Under its 2B zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, moderate, beneficial effect on this ORV.
- Portions of El Portal are zoned 3C (e.g., Rancheria Flat and Old El Portal), which could allow additional development or redevelopment (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development or redevelopment could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to major, adverse effects on native wildlife. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor to moderate, adverse effects to native wildlife (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.
- The revised boundary would increase the area included in the river corridor from 193 acres to 814 acres. Approximately 132 acres of habitat would be zoned 3C, allowing development of park operations and administration facilities, and this development would be primarily concentrated in the vicinity of existing development. Designation of 404 acres of habitat zoned 2A (encompassing much of the biological ORVs south of the river) and 2B designations in the other areas (supporting wildlife resources north of the river) limit the development intensity in these regions, resulting in a local, long-term, moderate, beneficial effect on wildlife resources and the biological ORVs.

Under Alternative 4, user capacity in the El Portal segment of the river corridor would be addressed through the establishment of a user capacity limit specific to each management zone within the El Portal river corridor boundary. The addition of the VERP program would result in data on the condition of wildlife resources that would guide future management decisions on El Portal. VERP management actions would be aimed at reducing the number of park users if the El Portal limit were exceeded. Potential management actions to reduce visitation in the El Portal segment include reducing access by removing parking or trails; requiring permits for day or other use; restricting fishing and swimming; and reducing employee numbers and/or housing them in other areas. Implementation of management zone limits for the El Portal management zones is expected to have a local, minor to moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

The impacts of management actions implemented as a result of VERP monitoring would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions are expected to reduce impacts by

limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

The application of management zoning and VERP monitoring and management actions with management zone user capacity limits would protect and enhance wildlife and the biological ORVs in El Portal. The zoning in El Portal would allow for road repair as well as additional development or redevelopment of park administration facilities, which could have short- and long-term, adverse effects to native wildlife. The biological ORVs within the El Portal Administrative Site would be located within the river corridor boundary (e.g., Crane Creek and other tributaries to the Merced River and the majority of the associated riverine habitats, habitat south of the Merced River) and the criteria and considerations (including the Section 7 determination process) would protect the biological ORVs . Overall, the application of an increased river boundary, restrictive management zoning, the VERP monitoring process, management zone limits, and resulting management actions within El Portal would have a local, short- and long-term, minor to moderate, beneficial effect on native wildlife and the biological ORVs.

Impacts in Wawona. Under Alternative 4, user capacity in the Wawona segments would be addressed through the establishment of a user capacity limit specific to the management zones within the Wawona segments of the river corridor. Monitoring would result in specific management actions aimed at reducing the number of park users if the management zone limits were exceeded. Potential management actions to reduce the number of people in the Wawona segments include instituting a day-use reservation system, reducing the number of commercial bus permits issued, and establishing additional fishing restrictions. Implementation of management zone limits that maintain existing levels of use in Wawona are expected to have a local, minor to moderate, beneficial effect on wildlife and the biological ORVs compared to the No Action Alternative.

The impacts of management actions implemented as a result of VERP monitoring of management zone user capacity limits would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on wildlife resources. Management actions are expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, feeding of wildlife, and human/wildlife conflicts, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

Overall, Alternative 4 would have a local, short- and long-term, minor to moderate, beneficial impact on native wildlife and the biological ORVs of Wawona.

Summary of Alternative 4 Impacts. Overall, limits on facilities through management zoning in El Portal in combination with VERP monitoring and management actions would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. Implementation of management zone limits would allow for park management to limit visitation in specific management zones. The annual maximum limit on park visitation under Alternative 4 is lower than current annual visitation and is likely to be lower than long-term increases expected under Alternative 1, resulting in minor, beneficial impacts to wildlife. The revised river corridor boundary at El Portal and management zones restrictive of development would protect the biological ORV within a quarter-mile of the river, resulting in

beneficial effects on wildlife resources. Alternative 4 would result in a local, short- and long-term, minor to moderate, beneficial impact on native wildlife and the biological ORVs within the river corridor. In addition, compliance with existing park policies would help ensure that the biological ORVs related to wildlife are protected and enhanced.

Cumulative Impacts

Cumulative effects to wildlife from past, present, and foreseeable future actions are the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on wildlife and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 4, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife and the biological ORVs of the Merced River corridor.

Impairment

Alternative 4 would have a local, short- and long-term, minor to moderate, beneficial effect on parkwide native wildlife as well as the biological ORVs of the Merced River corridor and therefore would not impair wildlife resources for future generations.

Rare, Threatened, and Endangered Species

Analysis

The following discussion provides an overview of the types of impacts to rare, threatened, and endangered species and the biological ORVs that could occur within each segment of the Merced River corridor under Alternative 4. Under this alternative, management zone limits would limit the number of park visitors in each management zone. In the short term under Alternative 4, visitor numbers are expected to be similar to those under Alternative 1. However, in the long term, visitor numbers would likely be lower than under Alternative 1 due to management zone limits and VERP monitoring and management actions that could limit the number of park visitors within each management zone and ensure that the management zone limits are not exceeded. The annual maximum limit on park visitation under Alternative 4 is lower than current annual visitation and is likely to be lower than expected under Alternative 1, resulting in beneficial impacts to rare, threatened, and endangered species. Long-term, beneficial impacts to special-status species would occur through implementation of management zone limits and VERP monitoring and management actions that would maintain use of the park at a level that would protect special-status species and the biological ORVs.

Management actions associated with the redirection of visitors from areas with known rare, threatened and endangered species and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Under Alternative 4, user capacity in the Wilderness segments of Yosemite National Park would continue to be addressed through implementation of the trailhead quota system and monitoring programs. Under this alternative, management would have the capacity to reduce quotas as needed. Enforcement of trailhead quotas could also be increased. Existing

quotas based on resource protection goals currently restrict the number of day users on both established trails and cross-country routes in wilderness areas to prevent degradation of high-elevation meadows (potential habitat for rare, threatened, and endangered species) and the biological ORVs. The reduction of quotas in response to VERP monitoring could result in local, short- and long-term, minor, beneficial effects on rare, threatened, and endangered species. Alternative 4 would also implement the VERP program in wilderness areas, resulting in additional resource-specific monitoring of biological indicators in wilderness management zones and subsequent management actions.

VERP management actions would be designed to address visitor-related impacts on biological resources, including rare, threatened, and endangered species. Management actions such as visitor education are expected to reduce impacts by changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, negligible, beneficial impact. Increased law enforcement, reduced wilderness trailhead quotas, and closure of areas would likely result in local, short- and long-term, negligible to minor, beneficial impacts to rare, threatened, and endangered species by reducing trampling, erosion, social trails, and human disturbance to wildlife.

Due to the seasonal nature of visitation to Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in these areas as a result of the trailhead quota system, implementation of the VERP program and management zone limits overall is expected to have local, short- and long-term, negligible to minor, beneficial impacts to rare, threatened, and endangered species and the biological ORVs in wilderness areas.

Impacts in Yosemite Valley. As described above, Alternative 4 would implement the VERP program and management zone user capacity limits in each management zone of the river corridor within Yosemite Valley. The user capacity program would result in additional resource-specific monitoring of indicators within this area. Implementation of VERP under Alternative 4 would be the same as described for Alternative 2.

Implementation of VERP monitoring in the Valley would result in data on the condition of rare, threatened, and endangered species that would guide future resource management and visitor experience decisions. User capacity limits specific to management zones of the river corridor would result in specific management actions aimed at reducing the number of park users if the Valley management zone limits were to be exceeded. Potential management actions to reduce visitation in the Valley include reducing access by removing parking areas or trails; requiring day-use permits; removing picnic tables; reducing the number of campsites; enforcing group size for campsites; reducing the number of rooms at hotels; reducing the number of employees; and housing employees outside of the Valley. Implementation of management zone limits that maintain existing levels of use for the Valley is expected to have a local, moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The effects of VERP management actions would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would have a local, short- and long-term, minor, beneficial impact. Increased ranger patrols, increased enforcement of trail restrictions, and closure of areas are expected to result in local, short- and long-term, minor to moderate, beneficial impacts to rare, threatened, and endangered species.

Alternative 4 would include management zone limits and implementation of the VERP program. Overall, Alternative 4 would provide protection for rare, threatened, and endangered species and the biological ORVs in Yosemite Valley and would result in a net local, short- and long-term, moderate, beneficial effect compared to Alternative 1.

Impacts in the Gorge. Under Alternative 4, user capacity in the Gorge segment would be addressed through the establishment of a user capacity limit specific to the established management zones within the Gorge segment. VERP monitoring would result in data on the condition of rare, threatened, and endangered species that would guide future resource management and visitor experience decisions. VERP management actions would be aimed at reducing the number of park users if the management zone limits were exceeded. Potential management actions to reduce the number of people in the Gorge segment include eliminating formal and informal parking areas, removing picnic areas, and requiring permits for use of the area. Limits for all management zones would be based on existing use and would prevent increased visitor-use effects to rare, threatened, and endangered species compared to Alternative 1. Therefore, implementation of management zone limits that maintain existing levels of use for the Gorge segment are expected to have a local, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVS compared to the No Action Alternative.

The impacts of VERP management actions would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would have a local, short- and long-term, minor, beneficial impact. Implementation of a permit reservation system for picnic areas, increased enforcement of trail restrictions, and closure of areas would likely result in local, short- and long-term, minor to moderate, beneficial impacts to rare, threatened, and endangered species.

Alternative 4 would include implementation of management zone limits as well as VERP monitoring and management actions, which would prevent visitor impacts from adversely affecting ORVs. Overall, Alternative 4 would provide protection for rare, threatened, and endangered species and the biological ORVs and would result in a local, short- and long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Gorge segment compared to Alternative 1.

Impacts in El Portal. Under Alternative 4, the river corridor boundary within El Portal would include nearly all of the ORVs within the El Portal Administrative Site. The boundary would include the full reaches of Crane Creek and most other tributaries to the Merced River and associated riverine habitats, and habitat south of the Merced River within the El Portal Administrative Site. Alternative 4 would designate low to very low-intensity management zoning (2A and 2B) for the majority of area south of the river and higher intensity zoning (3C) in limited areas in the vicinity of existing development areas. In addition, Alternative 4 designates several other smaller areas north of the river, such as Crane Creek and adjacent riparian habitat to the east, as lower intensity zoning (2B).

Examples of how management zoning would affect rare, threatened, and endangered species and the biological ORVs of El Portal are described below.

- The Sand Pit in El Portal was once used to mine sand from the Merced River. Under its 2B zoning, the Sand Pit could be restored, which would allow natural processes to prevail at this

location, enhance the aquatic habitat, and allow natural revegetation with riparian species, thus resulting in a local, moderate, beneficial effect on this ORV.

- Portions of El Portal would be zoned 3C (e.g., Railroad Flat, Rancheria Flat, Old El Portal), which could allow additional development (e.g., employee residences in Yosemite Valley could be relocated to the El Portal Administrative Site). Potential development could have both short-term (e.g., construction-related) and long-term (e.g., night lighting, human presence, fire suppression in the vicinity of structures), minor to moderate, adverse effects on rare, threatened, and endangered species. Although application of mitigation measures described in Appendix B would reduce impacts, long-term, minor, adverse effects to rare, threatened, and endangered species (e.g., conversion of upland woodland or scrub vegetation to developed facilities) would remain.
- The revised boundary would increase the area included in the river corridor from 193 acres to 814 acres. Approximately 132 acres of habitat would be zoned 3C, allowing development of park operations and administration facilities, and this development would be primarily concentrated in the vicinity of existing development. The designation of 404 acres of habitat as 2A (encompassing much of the biological ORVs south of the river and in the vicinity of Crane Creek) and 2B management zoning designations in some areas north of the river (that potentially support rare, threatened, and endangered species, such as Valley elderberry longhorn beetle, Tompkin's sedge, and Congdon's wooly sunflower) would substantially limit the development intensity in these regions, resulting in a local, long-term, moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

Under Alternative 4, user capacity in the El Portal segment would be addressed through the establishment of a user capacity limit specific to each management zone within the El Portal river corridor. The addition of VERP would provide data on the condition of rare, threatened, and endangered species that would guide future resource and visitor-use management decisions on El Portal. VERP management actions would be aimed at reducing the number of park users if the management zone limits were exceeded. Potential management actions to reduce the number of people in the El Portal segment include reducing access by removing parking or trails; requiring permits for day or other use; restricting fishing and swimming; and reducing employee numbers and/or housing them in other areas. Implementation of management zone limits for the El Portal management zones is expected to have a local, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The effects of VERP management actions would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions such as visitor education would be expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

The application of management zoning, VERP monitoring and management actions, and management zone user capacity limits set close to existing use levels would protect and enhance rare, threatened, and endangered species and the biological ORVs in El Portal. The zoning in El Portal would allow for road repair as well as additional development of park administration facilities, which could have short- and long-term, adverse effects on rare, threatened, and endangered species. The biological ORVs within the El Portal Administrative Site would be located within the river corridor boundary and the criteria and considerations (including the Section 7 determination process) would protect the biological ORVs. Overall, the application of

an increased river boundary, restrictive management zoning, and VERP with limits by management zone would have a local, short- and long-term, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs.

Impacts in Wawona. Under Alternative 4, user capacity in the Wawona segments would be addressed through the establishment of a user capacity limit specific to the management zones within the Wawona segments of the river corridor and set close to existing management zone use levels. Management actions would be taken to reduce the number of people in the Wawona segments if the management zone limits were exceeded. Management actions could include instituting a day-use reservation system, reducing the number of commercial bus permits issued, or establishing additional fishing restrictions. Implementation of management zone for the Wawona segments is expected to have a local, minor to moderate, beneficial effect on rare, threatened, and endangered species and the biological ORVs compared to the No Action Alternative.

The effects of management actions implemented as a result of VERP monitoring and management zone limits would vary depending on the action taken, although all of the actions would be designed to address visitor-related impacts on rare, threatened, and endangered species. Management actions are expected to reduce impacts by limiting visitor use and changing visitor behavior within the corridor in ways that would reduce trampling, erosion, social trails, and human disturbance, resulting in a local, short- and long-term, minor to moderate, beneficial impact.

Overall, Alternative 4 would have a local, short- and long-term, minor to moderate, beneficial impact on rare, threatened, and endangered species and the biological ORVs in Wawona.

Summary of Alternative 4 Impacts. Overall, limits on facilities through management zoning in El Portal in combination with VERP would allow existing natural areas to remain relatively intact and would direct restoration and enhancement of degraded native habitats. Implementation of management zone limits would allow park management to limit visitation in specific management zones. The annual maximum limit on park visitation under Alternative 4 is lower than current annual visitation and is likely to be lower than under Alternative 1, resulting in minor, beneficial impacts to rare, threatened, and endangered species. The revised river corridor boundary at El Portal and management zones restrictive of development would protect the biological ORVs within the El Portal Administrative Site, resulting in beneficial effects on rare, threatened, and endangered species. Alternative 4 would result in a local, short- and long-term, minor to moderate, beneficial impact on rare, threatened, and endangered species and the biological ORVs within the river corridor.

Cumulative Impacts

Cumulative effects to rare, threatened, and endangered species from past, present, and foreseeable future actions are the same as those described for Alternative 1. Past, present, and reasonably foreseeable future actions in the immediate vicinity of Yosemite National Park could have a long-term, minor, beneficial effect on rare, threatened, and endangered species and the biological ORVs within the Merced River corridor. Overall, these cumulative actions, in combination with Alternative 4, could have a net local, short- and long-term, minor to moderate, beneficial effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor.

Impairment

Alternative 4 would have a local, short- and long-term, minor to moderate, beneficial effect on parkwide rare, threatened, and endangered species and the biological ORVs of the Merced River corridor and therefore would not impair these resources for future generations.

Air Quality

Analysis

The following discussion provides an overview of the types of impacts to air quality that could occur within each segment of the Merced River corridor associated with Alternative 4.

In general, under Alternative 4 air quality in the river corridor would continue to be influenced by local sources within the park and regional sources upwind of the park, and would continue to be subject to emissions trends similar to those described under Alternative 1.

The main differences between air quality conditions under Alternatives 1 and 4 would result from implementation of management zone limits; implementation of a VERP program, and construction or demolition activities and long-term impacts on air quality that could occur as a result of the revised river corridor boundary in the El Portal segment of the river.

Impacts in Wilderness. Under Alternative 4, the management zone limits for Wilderness segments in the river corridor would be set at the existing trailhead quota system limits. Under Alternative 4, use of trails in wilderness areas would continue consistent with conditions under Alternative 1.

Implementation of management zone limits and the VERP program for Wilderness segments would result in additional monitoring of indicators. Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. The impacts of management actions based on management zone limits and VERP monitoring would vary depending on the action. Less restrictive management actions would be expected to have no effect on air quality in wilderness areas. The most restrictive measures could have beneficial effects by reducing the number of people recreating within the river corridor, as discussed under Alternative 2. The number of people could also be limited through a reduction of trailhead quotas based on management zone limit monitoring. These more restrictive measures could result in fewer people using wilderness areas and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions in other areas of the park. On this basis, management actions resulting from management zone limit and VERP monitoring could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Overall, wilderness areas would continue to be largely free of effects from local emissions sources (with the exception of prescribed fires), but would be subject to regionwide emissions trends. Alternative 4 VERP program would be likely to prevent visitor use from adversely affecting ORVs in the Wilderness segments. With respect to ozone and particulate matter, implementation of management zone limits and the VERP program would be expected to have a local, long-term, negligible, beneficial impact on air quality in Wilderness segments compared to Alternative 1.

Impacts in Yosemite Valley. Like Alternative 1, under Alternative 4 air quality in Yosemite Valley would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in the

Valley. Emissions from local stationary, area, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1. In the short term, visitor levels and associated traffic in the Valley would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1 because of management zone limits and VERP management action.

Implementation of management zone limits and the VERP program under Alternative 4 could have an indirect, beneficial impact on air quality in the Valley. Park management would manage visitor use in the Valley to ensure that the limits for each management zone are not exceeded. If future visitor use levels were to exceed the management zone limits in the Valley, management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in the Valley in the long term would likely result in fewer people in the Valley and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions.

The VERP program under Alternative 4 would be the same as described under Alternative 2. The impacts of management actions based on VERP monitoring would vary depending on the action. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could result in reduced visitor use, fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions, which could result in local, long-term, negligible, beneficial impacts on air quality in the Valley.

Management actions such as site hardening, construction of new facilities or removal of existing facilities could result in substantial quantities of dust, and, as a result, local visibility and PM-10 and PM-2.5 concentrations could be adversely affected. Without mitigation, dust raised by construction resulting from some management actions could have a moderate but temporary effect in the immediate vicinity of individual sites. Implementation of mitigation measures (as described in Appendix B) would reduce the temporary and localized air quality impacts from construction activities to a minor level. On this basis, these types of management actions could result in localized, short-term, minor, adverse impacts on air quality. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 4 is expected to prevent visitor use from adversely affecting ORVs in the Valley. Certain VERP management actions could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of management zone limits and the VERP program would likely have an overall local, long-term, negligible, beneficial impact on air quality in the Valley compared to Alternative 1 because any increases in users and associated vehicle use would likely be lower.

Impacts in the Gorge. Like Alternative 1, under Alternative 4 areas zoned Untrailed (1A), Open Space and Undeveloped Open Space (2A, 2A+), and Discovery (2B) in the Gorge segment would continue to be free of effects from local emissions sources (except for prescribed fires), but would be subject to regionwide emissions trends. Areas zoned Day Use (2C), Attraction (2D) and Park Operations and Administration (3C) would continue to experience a local, long-term, minor,

adverse effect due to the concentration of vehicular emissions in those areas. In the short term, user levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, user numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to annual and management zone limits and VERP management actions.

Implementation of management zone limits and the VERP program under Alternative 4 could have an indirect, beneficial impact on air quality in the Gorge segment. Park management would manage visitor use in the Gorge segment to ensure that the limits for each management zone are not exceeded. If future visitor use levels were to exceed the management zone limits in the gorge, park management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in the Gorge segment in the long term would likely result in fewer people in the Merced River gorge and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2.

The impacts of management actions based on VERP monitoring would vary depending on the action. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles and buses, or the number of people recreating within the river corridor. These more restrictive measures could result in fewer people in the Gorge segment and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. On this basis, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Management actions such as site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality related to construction, as discussed under the Yosemite Valley segment above. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 4 would likely prevent visitor use from adversely affecting ORVs in the Gorge segment. Certain management actions in response to VERP monitoring could result in localized short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of management zone limits and the VERP program would be expected to have an overall local, long-term, negligible, beneficial impact on air quality in the Gorge segment compared to Alternative 1 because in the number of users and associated vehicle use would be lower.

Impacts in El Portal. Under Alternative 4, the El Portal segment of the river corridor boundary would delineate the ORVs along the river. The zoning for this alternative would include more restrictive zoning than any other alternative for much of the area south of the river. While portions of the Trailer Village/Abbieville area would be zoned for Park Operations and Administration (3C), the area west and south of Abbieville would be zoned Discovery (2B) and the area east of Abbieville would be zoned Open Space (2A). The area north of the river and east

of Crane Creek would be zoned 2B except for the existing developed areas at Railroad Flat, Rancheria Flat, and Old El Portal. These existing developed areas and the Middle Road area would be zoned 3C. This zoning plan would be the most restrictive of development opportunities for park administrative facilities and allow a more limited amount of development potential. The total acreage within the El Portal segment of the river corridor under Alternative 4 would be 814 acres, which would be four times greater than the boundary presented under Alternative 1.

The proposed boundary and zoning designations for the El Portal segment would likely result in some development or redevelopment within the 3C zones. Any construction or redevelopment that would occur could result in significant quantities of dust, and, as a result, local visibility and PM-10 and PM-2.5 concentrations could be adversely affected. Without mitigation, dust raised by construction resulting from the revised boundary in the El Portal segment could have a major but temporary effect in the immediate vicinity of individual sites. Implementation of Best Management Practices listed in Appendix B would reduce the temporary and localized air quality impacts from construction activities to a minor level; therefore, the construction associated with the El Portal segment management zoning under Alternative 4 could result in localized, short-term, minor, adverse impacts on air quality. However, overall, development in El Portal under Alternative 4 would be less intensive than under Alternative 1.

In the short term, visitor levels in El Portal would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, the number of visitors and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1.

Implementation of management zone limits and the VERP program associated with Alternative 4 could have an indirect, beneficial impact on air quality in the El Portal segment. Park management would manage visitor use in El Portal to ensure that the limits for each management zone are not exceeded. If future visitor use levels exceeded the management zone limits in El Portal, park management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in El Portal in the long term would likely result in fewer people in El Portal and could indirectly result in fewer vehicle trips (and associated vehicle-miles traveled) and a corresponding reduction in ozone precursor and particulate matter emissions. However, since the El Portal segment includes Highway 140, a primary entrance road to the park, reductions in vehicle trips through the segment would be nominal.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. In general, management actions such as visitor education would be expected to have little or no effect on air quality. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses, or the number of users recreating within the river corridor. These more restrictive measures could result in fewer vehicle trips (and associated vehicle-miles traveled), and a corresponding reduction in ozone precursor and particulate matter emissions. On this basis, management actions could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality during construction. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas. Site-hardening activities or construction of new facilities would likely only occur in the areas zoned Park Operations and Administration (3C).

Overall, Alternative 4 is expected to prevent visitor use from adversely affecting ORVs in the El Portal segment. Development associated with the revised El Portal boundary (even though development would be highly restricted) and certain VERP management actions could result in localized, short-term, minor, adverse impacts on air quality during construction or redevelopment activities. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1. Overall, with respect to ozone and particulate matter, management zone limits and the VERP program would likely have an overall local, long-term, negligible, beneficial impact on air quality in the El Portal segment compared to Alternative 1 because visitor numbers and associated vehicle use would likely be lower.

Impacts in Wawona. Like Alternative 1, under Alternative 4 air quality in the Wawona segments of the river corridor would continue to be influenced by local sources within the park and by regional sources upwind of the park. The effects of local emissions sources would continue to be concentrated in Wawona. Emissions from local stationary, area, and mobile sources would follow emissions trends and continue to be regulated in a manner consistent with Alternative 1.

In the short term, visitor levels and associated traffic in Wawona would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than under Alternative 1.

Implementation of management zone visitor limits and the VERP program under Alternative 4 could have an indirect, beneficial impact on air quality in Wawona. Park management would manage visitor use in Wawona to ensure that the limits for each management zone are not exceeded. If future visitor use levels were to exceed the management zone limits in Wawona, park management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in Wawona in the long term would likely result in fewer people in Wawona and could indirectly result in fewer vehicle trips, associated vehicle-miles traveled and corresponding ozone precursor and particulate matter emissions.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. Management actions could range from less restrictive measures (such as visitor education and site hardening) to more restrictive actions (reducing visitor activities or access in certain areas). In general, less restrictive management actions would likely have little or no effect on air quality. More restrictive measures could result in local, long-term, negligible, beneficial impacts on air quality in the park and region.

Conversely, management actions that result in site hardening, construction of new facilities, or removal of existing facilities could have local, short-term, minor, adverse impacts on air quality related to construction. Some of the site-hardening activities (e.g., boardwalks and observation platforms) could also result in localized, long-term, negligible, beneficial air quality impacts by reducing dust from hikers or visitor use in exposed soil areas.

Overall, Alternative 4 is expected to prevent visitor use from adversely affecting ORVs in Wawona. Certain management actions in response to VERP monitoring could result in localized, short-term, minor, adverse impacts on air quality during construction activities. However, with respect to ozone and particulate matter, implementation of management zone limits and the VERP program would likely have an overall local, long-term, negligible, beneficial impact on air quality in Wawona segments compared to Alternative 1 because any increases in visitor numbers and associated vehicle use would likely be lower.

Summary of Alternative 4 Impacts. Overall, Alternative 4 is expected to prevent visitor use from adversely affecting ORVs. Certain management actions in response to management zone use limit and VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized, short-term, minor, adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1. Overall, Alternative 4 is expected to have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1 because user numbers and associated vehicle use would be lower.

Cumulative Impacts

Cumulative effects to air quality under Alternative 4 would be the same as identified and described under Alternative 1.

Based on the revised river corridor boundary in El Portal and implementation of certain VERP management actions, Alternative 4 could contribute to the cumulative number of construction sites in and near the corridor. In most instances, construction projects undertaken as part of Alternative 4 would not overlap in time and space with cumulative construction projects; therefore, the local, short-term, major, adverse effects on air quality due to construction activities could be reduced to a minor intensity with implementation of Best Management Practices. Over the long term, with respect to ozone, conditions in the river corridor would be determined almost entirely by regional emissions trends. The local, long-term, negligible, beneficial impact on air quality within the Merced River corridor associated with Alternative 4 (compared to Alternative 1) would have little effect on overall ozone levels in Yosemite National Park. As discussed under Alternative 1, the long-term, regional effect would be moderate and beneficial, primarily due to the emissions reductions expected with implementation of ongoing state and federal mobile-source control programs. With respect to particulate matter, conditions in the river corridor would be determined by both regional sources and local sources, and the relative influence of these two types of sources would vary on a daily and seasonal basis. Given the opposing emissions trends between primary and secondary sources of particulate matter and the varying relative contributions of regional and local emissions sources, it would be speculative to conclude that the combined effect of cumulative actions and the benefits of Alternative 4 (compared to Alternative 1) would be beneficial or adverse with respect to particulate matter; however, the opposing emissions trends would tend to diminish the magnitude of the effect, regardless of whether the effect would be beneficial or adverse.

Impairment

Management actions in response to management zone limit and VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized, short-term, minor, adverse impacts on air quality during construction activities. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1. Overall, Alternative 4 would likely have a local, long-term, negligible, beneficial impact on air quality within the Merced River corridor compared to Alternative 1 because user numbers and associated vehicle use would likely be lower. Therefore, Alternative 4 would not impair air quality in the park.

Noise

Analysis

The following discussion provides an overview of the types of impacts to the ambient noise environment associated with Alternative 4 that could occur within each segment of the Merced River corridor.

Under Alternative 4, the acoustical environment in wilderness areas would generally continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights. The acoustical environment in nonwilderness areas would continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in Yosemite National Park would follow similar trends as described under Alternative 1.

The main differences between noise conditions under Alternative 4 and those under Alternative 1 would relate to the following issues: implementation of the VERP program with management zone limits; and the construction or demolition activities and long-term impacts on the noise environment that could occur as a result of the change in management zoning resulting from adoption of the revised corridor boundary in the El Portal segment of the river.

Impacts in Wilderness. The enjoyment of natural river sounds is integrated into the recreation ORV in designated wilderness areas. That aspect would continue to be considered for protection and enhancement in wilderness areas.

Under Alternative 4, the management zone limits for all Wilderness segments would be set at the existing wilderness trailhead quotas. Under Alternative 4, use of trails in wilderness areas would continue consistent with existing conditions and conditions under Alternative 1.

Implementation of the VERP program with management zone limits for the wilderness areas would result in additional monitoring of indicators within wilderness areas. Implementation of the VERP program with management zone limits under Alternative 4 would be the same as described under Alternative 2. The impacts of management actions implemented as a result of management zone limits and the VERP program would vary depending on the action taken. VERP management actions could range from softer measures (visitor education efforts) to more restrictive measures (increased enforcement of existing regulations, restrictions on certain activities [such as stock use], and restrictions on level of use [closure of certain areas]). Less restrictive measures would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures, such as the reduction of trailhead quotas or restrictions on stock use, could have beneficial effects by reducing the number of people recreating within the river corridor, and the River Protection Overlay in particular, and the number of encounters with other parties and the number of people at one time at selected sites in wilderness areas. In addition, numbers of people could be limited through reduction of wilderness trailhead quotas resulting from management zone limits monitoring. These more restrictive measures would result in local, short- and long-term, negligible to minor, beneficial impacts on the enjoyment of natural river sounds and the broader ambient noise environment in wilderness areas.

Overall, the acoustical environment in wilderness areas would, however, continue to experience intrusive noise generated by high-altitude aircraft overflights. In some wilderness areas, such

overflights would continue to be the principal source of adverse noise impacts. Noise from high-altitude aircraft overflights may worsen over the long term, if the national trend in the number of aircraft flights continues to increase. The management zone limits and VERP program would not address conditions related to aircraft overflights.

Due to the seasonal nature of visitation to the Wilderness segments of the river corridor coupled with the limited number of visitors allowed into the river corridor in wilderness areas as a result of the park's existing trailhead quota system, implementation of the management zone limits and VERP program overall would be expected to have a local, long-term, negligible to minor, beneficial impact on the natural enjoyment of river sounds portion of the recreation ORV and the broader ambient noise environment in wilderness areas relative to Alternative 1.

Impacts in Yosemite Valley. As under Alternative 1, under Alternative 4 the acoustical environment in the Valley would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in wilderness and nonwilderness areas of the Valley would follow trends similar to those described under Alternative 1.

In the short term, visitor levels and associated traffic in the Valley would be reduced to lower than existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 as a result of management zone and annual corridorwide visitation limits and VERP monitoring and management.

Implementation of management zone limits and the VERP program could have an indirect beneficial impact on the ambient noise environment in the Valley. Park management would manage visitor use in the Valley to ensure that the limits for each management zone are not exceeded. If future visitor use levels exceeded the management zone limits in the Valley, management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in the Valley in the long term would likely result in fewer people in the Valley and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

The VERP program under Alternative 4 would be the same as described under Alternative 2. Management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial noise effects by reducing the number of vehicles, buses, or the number of people recreating with the river corridor. These more restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley.

Conversely, implementation of the management actions that result in site hardening, construction of new facilities, or removal of existing facilities could result in construction or demolition activities that could generate substantial amounts of noise during the temporary construction period. At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, such as the number and types of equipment in operation on a given day, their usage rates, the level of background noise in the area, and the distance between sensitive uses and the construction site. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of

excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short term, moderate, and adverse. Implementation of best management practices listed in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, these types of management actions could result in localized, short-term, minor, adverse impacts on the ambient noise environment related to their construction.

Overall, Alternative 4 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of the management zone limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Valley relative to Alternative 1, since visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in the Gorge. As under Alternative 1, under Alternative 4, the acoustical environment in areas zoned 1A, 2A, 2A+, and 2B would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft overflights and distant roadway noise. The acoustical environment in areas zoned 2C, 2D and 3C would continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in the gorge area would follow trends similar to those described under Alternative 1. Areas zoned 2C, 2D and 3C would continue to experience a local, long-term, minor, adverse effect due to the concentration of vehicular noise in those areas.

In the short term, visitor levels and associated vehicle use in the Gorge segment would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than Alternative 1 due to management zone limit and VERP monitoring and resulting management actions.

Implementation of management zone limits and the VERP monitoring and management program could have an indirect beneficial impact on the ambient noise environment in the Gorge segment. Park management would manage visitor use in the Gorge segment to ensure that the limits for each management zone are not exceeded. If future visitor use levels exceeded the management zone limits in the Gorge segment, management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in the Gorge area in the long term would likely result in fewer people in the Gorge segment and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

Implementation of the VERP program with management zone limits under Alternative 4 would be the same as described under Alternative 2. Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas. In general, educational measures would be expected to result in local, short and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles, buses, or the number of people recreating within the river corridor. These more restrictive measures could also result in fewer vehicle trips and lower roadside noise levels.

On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Gorge segment.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 4 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. Overall, implementation of management zone limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the Gorge segment relative to Alternative 1, since visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in El Portal. Under Alternative 4, the El Portal segment of the river provides for a boundary that delineates the ORVs north of the river includes all of the land in the El Portal Administrative Site south of the river. The zoning in El Portal under this alternative would include more restrictive zoning than any other alternative for much of the area south of the river. While portions of the Trailer Village/Abbieville would be zoned for Park Operations and Administration (3C), the area to the west and south of Abbieville would be zoned Discovery (2B), and the area to the east of the Abbieville area would be zoned for Open Space (2A). The area north of the river and east of Crane Creek would be zoned Discovery (2B), except for the existing developed areas at Railroad Flat, Rancheria Flat, and Old El Portal. These existing developed areas and the Middle Road area would be zoned for Park Operations and Administration. This zoning would be the most restrictive of development opportunities for park administrative facilities, and would allow for a more limited amount of development potential. The total acreage within the El Portal segment of the river corridor under Alternative 4 would be 814 acres, which would be four times greater than the boundary presented under Alternative 1.

The proposed boundary and zoning for the El Portal segment would be likely to result in limited additional development or redevelopment within the 3C areas. Nonetheless, the ambient noise environment in these zones could be influenced by noise from any construction or demolition activities that could occur. At each individual construction or demolition site, the related noise impact would vary depending upon a number of factors, as described under the Yosemite Valley segment above. However, in general, given the low background noise levels away from park roadways and the expectation of visitors that the environment be free of excessive noise sources (if not naturally quiet), the impact from construction or demolition activities would generally be local, short term, moderate, and adverse. Implementation of mitigation measures described in Appendix B would reduce the temporary and localized noise impacts from equipment associated with construction or demolition activities from a moderate to a minor level. On this basis, the construction associated with the management zoning under Alternative 4 could result in localized, short-term, minor, adverse impacts on the ambient noise environment. However, overall, development in El Portal under Alternative 4 would be less intensive than under Alternative 1.

In the short term, visitor levels in El Portal would remain approximately the same as existing levels. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would be lower than Alternative 1 due to management zone limits and the VERP program.

Implementation of management zone limits and the VERP program could have an indirect beneficial impact on the ambient noise environment in the El Portal area. Park management would manage visitor use in El Portal to ensure that the limits for each management zone are not exceeded. If future visitor use levels exceeded the management zone limits in El Portal, management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in El Portal in the long term would likely result in fewer people in El Portal and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels. However, since the El Portal segment includes Highway 140, a primary entrance road to the park, reductions in vehicle trips through the segment would be nominal.

Implementation of the VERP program with management zone limits under Alternative 4 would be the same as described under Alternative 2. The impacts of management actions implemented as a result of VERP monitoring would vary depending on the action taken. Management actions could range from less restrictive measures such as education and site hardening, to more restrictive actions related to reducing visitor activities or access in certain areas. Management actions would be more likely to be restrictive of levels and types of visitor use in areas zoned 2A and 2B, as these areas are typically more sensitive to visitor impacts and are managed for lower visitor concentrations. Management actions taken to address standards in the areas zoned 3C would likely focus more on education, site hardening, and other management actions that continue to allow for visitor use, as these areas have been identified as being appropriate for higher levels of visitor use.

In general, management actions such as visitor educational measures would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in the El Portal area.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above. Site-hardening activities or construction of new facilities would only occur in areas zoned 3C.

Overall, Alternative 4 would be expected to prevent visitor use from adversely affecting ORVs. Development associated with implementation of the El Portal that delineates the ORVs along the El Portal segment of the river (even though development would be highly restricted) and certain management actions implemented in response to VERP monitoring could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction or redevelopment activities. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1 as the corridor area would be increased. Overall, implementation of management zone limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial

impacts on the ambient noise environment in the El Portal area relative to Alternative 1, since visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Impacts in Wawona. As under Alternative 1, under Alternative 4 the acoustical environment in Wawona would generally continue to be shaped by human-caused sources of noise and by natural sources of sound. The ambient noise environment in Wawona would follow similar trends as described under Alternative 1.

In the short term, visitor levels and associated traffic in Wawona would remain approximately the same as existing levels, similar to Alternative 1. Over the long term, visitor numbers and associated vehicle use could increase, but such increases would likely be lower than for Alternative 1 as a result of management zone limits and the VERP program.

Implementation of management zone limits and the VERP program under Alternative 4 could have an indirect beneficial impact on the ambient noise environment in Wawona. Park management would manage visitor use in Wawona to ensure that the limits for each management zone are not exceeded. If future visitor use levels exceeded the management zone limits in Wawona, management would take actions to restrict or reduce visitor use levels to the adopted limits. Restrictions on the number of visitors in Wawona in the long term would likely result in fewer people in Wawona and could indirectly result in fewer vehicle trips on park roads, fewer associated vehicle-miles traveled, and correspondingly lower roadside noise levels.

Implementation of the VERP program with management zone limits under Alternative 4 would be the same as described under Alternative 2. In general, management actions such as visitor education would be expected to result in local, short- and long-term, negligible, beneficial impacts on the ambient noise environment. More restrictive measures could have beneficial effects by reducing the number of vehicles or buses, or the number of people recreating within the river corridor. These more restrictive measures could also result in fewer vehicle trips and lower roadside noise levels. On this basis, management actions could result in local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona.

Conversely, implementation of management actions that include site-hardening activities, construction of new facilities or removal of existing facilities could have local, short-term, minor (with implementation of best management practices), adverse noise effects related to their construction, as discussed under the Yosemite Valley segment above.

Overall, Alternative 4 would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring could result in localized short-term, minor to moderate (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, taken as a whole, implementation of management zone limits and the VERP program would be expected to have local, long-term, negligible to minor, beneficial impacts on the ambient noise environment in Wawona relative to Alternative 1 since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower.

Summary of Alternative 4 Impacts. As under Alternative 1, the acoustical environment in wilderness areas would not be affected by Alternative 4, but would continue to be shaped largely by natural sources of sound punctuated by intrusive noise generated by high-altitude aircraft

overflights. The acoustical environment in nonwilderness areas would continue to be shaped by human-caused sources of noise and by natural sources of sound.

Overall, implementation of management zone limits and the VERP program through monitoring of indicators for each zone, coupled with the implementation of appropriate management actions when required based on monitoring results, would be expected to prevent visitor use from adversely affecting ORVs. Certain management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal could result in localized, short-term, minor (with implementation of best management practices), adverse impacts on the ambient noise environment during construction activities. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1 as the corridor area would be increased. Less intensive development could have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the El Portal area.

Overall, implementation of Alternative 4 would be expected to have a local, long-term, negligible, beneficial impact on ambient noise levels in nonwilderness areas within the Merced River corridor relative to Alternative 1 since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower due to management zone limits and the VERP program.

Cumulative Impacts

Cumulative effects to the ambient noise environment are described under Alternative 1.

Based on the revised river corridor in El Portal and implementation of certain management actions that could be implemented in response to VERP monitoring, Alternative 4 could contribute to the cumulative number of construction sites in and near the corridor; in most instances, construction projects undertaken as part of Alternative 4 would not overlap in time and space with cumulative construction projects, and thus, the local, short-term, adverse effects on noise due to construction activities could be reduced to a moderate intensity with implementation of best management practices. Over the long term, in wilderness areas, noise impacts in the corridor would be determined almost entirely by cumulative trends in air travel rather than by in-park noise sources under Alternative 4; as discussed under Alternative 1, if the national trend in air travel continues to increase, it could have a local, long-term, minor, adverse effect on the ambient noise environment. In nonwilderness areas, the cumulative actions that would tend to reduce motor vehicle trips would result in a local, long-term, moderate, adverse effect on noise levels in the immediate vicinities of such facilities due to the concentration of vehicular activity, but could result in a local, long-term, moderate, beneficial effect in the eastern portion of the Valley due to reduced vehicle trips and associated noise, and related to the type of bus technology used for transit purposes. Taken as a whole, Alternative 4 with implementation of the management zone limit and VERP program and its more restrictive development scheme in the El Portal area would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1.

Impairment

Management actions implemented in response to VERP monitoring, and development that could occur as a result of the revised river corridor boundary in El Portal, could result in localized short-term, minor (with implementation of best management practices), adverse impacts to the

noise environment and the soundscapes in the vicinities of construction or demolition projects. However, development in El Portal under Alternative 4 would be less intensive than under Alternative 1 as the corridor area would be increased. Overall, Alternative 4 with implementation of the management zone limit and VERP program and its more restrictive development scheme in the El Portal area would have a local, long-term, negligible to minor, beneficial impact on the ambient noise environment in the Merced River corridor relative to Alternative 1, since any increases in visitor numbers, associated vehicle use and corresponding noise levels would likely be lower due to management zone limits and VERP monitoring and management. Therefore, implementation of Alternative 4 would not impair park soundscapes.

Cultural Resources

Archeological Resources

Analysis

The following discussion provides an overview of the types of impacts to archeological resources that could occur within each segment of the Merced River corridor under Alternative 4 from implementation of management zone limits in addition to a VERP program. Effects on archeological resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas with known archaeological resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Archeological resources in the Yosemite Wilderness include historic and prehistoric resources related to occupation and homesteading, hunting, travel and trade, the U.S. Cavalry, and wilderness tourism.

User capacity within wilderness areas of Yosemite National Park is addressed through a trailhead quota system and monitoring of wilderness resource conditions. The management zone limits for the Wilderness segments would be set at the existing trailhead quota numbers.

Since the management zone limits would be set at existing trailhead quota levels, no additional management actions would need to be taken to implement the limits in the wilderness areas. Implementation of the management zone limits in wilderness would have no effect on archeological resources within Wilderness segments compared to the No Action Alternative.

Implementation of the VERP program for the wilderness areas under Alternative 4 would be the same as described under Alternative 2. Education efforts would be expected to result in local, short and long-term, minor, beneficial impacts on archeological resources. More restrictive measures would be expected to have local, long-term, moderate, beneficial effects on the archeological resources due a potential decrease in degradation of archeological deposits.

The combination of management zone limits with VERP monitoring would be expected to result in a local, long-term, negligible benefit on archeological resources in the wilderness compared to

the No Action Alternative. This benefit would be achieved by ensuring that resource conditions in wilderness areas are maintained within established standards through enforcement of management zone limits and additional restrictions as needed to meet the VERP standards. Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quotas would likely have a local, long-term, negligible, beneficial impact on archeological resources by improving the natural environment.

Impacts in Yosemite Valley. Archeological resources in Yosemite Valley include several historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Management zone limits for the Yosemite Valley segment were set based on the management zoning for the area, available facilities, and existing levels of use. The park would manage visitor use within the Valley to ensure that the limits for each management zone are not exceeded. If visitor numbers in any zone exceed the limits, management would be required to take actions to reduce visitor numbers in that zone. Management actions could include visitor education regarding different areas to visit, closure of certain areas, removal of trails and or parking that facilitates access to certain areas, removal of other visitor facilities that might encourage use (such as picnic tables and/or restrooms), and requiring permits or reservations for accessing certain areas within the Valley.

These management actions would result in a local, long-term, moderate, beneficial effect on archeological resources within Yosemite Valley, because these measures are likely to lower visitor levels in the Valley in the long term and would therefore decrease visitor-related damage (such as vandalism, site collection, erosion, and trampling) compared to the No Action Alternative.

In addition to managing visitor numbers within the Valley, Alternative 4 would implement a VERP program. The effects of VERP under this alternative would be the same as described under Alternative 2. Educational measures would be expected to have local, short and long term, negligible to minor, beneficial effects on archeological resources. More restrictive measures would benefit the archeological resources by reducing opportunities for site degradation. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site hardening activities could result in adverse effects on archeological resources if proposed facilities would damage deposits or increase the likelihood of visitor-linked damage. These actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement. The effects of these actions would likely be local, long-term, negligible to minor, and adverse. Alternative 4 would have an overall local, long-term, moderate, beneficial impact on archeological resources, except for site-hardening activities, which have the potential to cause a local, long-term, minor, adverse impact on archeological resources.

Overall, Alternative 4 is expected to have a moderate benefit to archeological resources. Where educational measures are implemented, the effect on archeological resources is expected to be long-term, negligible, and beneficial. Management actions that result in long-term, broad based restrictions could have long-term, moderate beneficial impacts to archeological resources. Other actions, such as site hardening, could have short-term to long-term, minor, adverse effects on archeological resources.

Impacts in the Gorge. Archeological resources in the Gorge segment include historic and prehistoric sites related to occupation, the Civilian Conservation Corps, early roads and trails, road development, and early tourism.

Management zone limits for the Gorge segment would be based on the management zoning for these areas and available parking. The park would manage the number of visitors in the Gorge to ensure that the management zone limits are not exceeded. If the limits are exceeded, management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, park management could reduce parking to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park, or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge.

The results of these management actions would depend upon the management action taken. Management actions that reduce available access to the Gorge, such as removal of parking areas, would likely result in local, long-term, negligible, beneficial effects on archeological resources due to a return of the natural environment and a reduced likelihood of visitor-related damage.

Implementation of the management zone limits is expected to result in negligible effects in the short term because existing use in these areas are relatively low. In the long term, the level of use under this alternative would likely be lower than under the No Action Alternative. Since current use levels are low and there are few crowding problems, this reduction of use would provide local, long-term, negligible, benefits to archeological resources in the Gorge.

The effects of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures would be expected to result in local, short and long term, negligible to minor beneficial effects. More restrictive measures would be expected to provide for a less crowded and more natural environment. These measures could result in short-term or long-term, moderate, beneficial impacts to archeological resources. Site-hardening activities could result in some adverse effects on archeological resources but would be limited to the small areas designated for higher levels of development and use—areas zoned Attraction (2D) and Park Operations and Administration (3C). Because the park is mandated to protect the cultural ORV, the effects of new development would likely be local, long-term, negligible to minor, and adverse.

Overall, Alternative 4 is expected to have local, long-term, minor to moderate, beneficial impacts on archeological resources. Where educational measures are implemented, the effect is expected to be long term, negligible and beneficial. Management actions that result in long-term, broad based restrictions could have long-term, moderate, beneficial impacts to archeological resources. Other actions, such as site hardening, could have short-term to long-term, minor, adverse effects on archeological resources in the Gorge segment.

Impacts in El Portal. Archeological resources for El Portal consist of some of the oldest prehistoric sites within the Merced River corridor. Prehistoric and historic archeological sites and districts in El Portal include examples of villages, homesteads, early tourism, as well as the mining, railroad, and timber industries.

The boundary for the El Portal segment of the river in this alternative was based upon the locations of specific ORVs with primarily low-density zoning, except in limited developed areas. Under this alternative, there would be Open Space (2A) and Discovery (2B) zoning south of the

river except in the Trailer Village/Abbieville area, which would be zoned Park Operations and Administration (3C). North of the river would be zoned 2B except for the pockets of existing development such as Railroad Flat, Rancheria, Middle Road and Old El Portal, which would be zoned 3C.

In the areas zoned 3C, additional development of facilities or removal of facilities could occur. If this development or removal occurred and earthmoving activities were required, then intact archeological resources, which are identified as a component of the cultural ORV, could be disturbed. This is considered a local, long-term, minor to major, adverse impact, and the intensity of impact would depend on the nature, location, and design of the facility to be developed or removed as well as the quantity and data potential of the archeological resource(s) affected. These actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. Some of these areas contain archeological sites that could be impacted by these activities. When compared to the other alternatives, Alternative 4 would have less adverse impacts to archeological resources due to fewer acres zoned 3C. In this alternative, there would be less additional development or redevelopment within most areas of the El Portal segment, thus resulting in less potential for impacts to archeological resources.

New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan, as well as current park management policies. These management policies guide how actions could be implemented in order to minimize adverse effects to cultural resources. All ORVs must be protected on a segmentwide basis regardless of the zoning designation or whether the resources are in or outside of the river corridor boundary. Therefore, the adverse effect of new development on archeological resources within the segment would likely be, long term, and negligible.

In general, the river corridor boundary and management zoning under Alternative 4 would have a local, long-term, moderate to major, beneficial effect on archeological resources compared to Alternative 1, which would have a smaller river corridor and be less protective management zoning.

Implementation of management zone limits for this segment is expected to have negligible effects on archeological resources in the short term due to low levels of visitor use. In the long term, enforcement of management zone limits for this segment could limit future development, require removal of existing informal parking areas, or require additional restrictions on visitor activities such as rafting, kayaking, or fishing. Implementation of these types of measures would be expected to have local, long-term, minor to moderate, beneficial effects on archeological resources.

Implementation of a VERP program under Alternative 4 would have the same effects as described under Alternative 2. Educational measures would likely result in local, short and long term, negligible to minor, beneficial effects. More restrictive measures would likely result in short-term or long-term, moderate to major, beneficial impacts to archeological resources. Site hardening, could result in some adverse effects on archeological resources. Since the park is mandated to protect the cultural ORVs, the effects of new development would likely be local, long-term, negligible, and adverse.

Short- and long-term, adverse effects to archeological resources could occur in areas zoned Park Operations and Administration (3C) as the result of future actions that could be implemented under the this zoning (e.g., new employee housing, road repair). However, adverse effects would be reduced in intensity under Alternative 4 because these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement. The implementation of management zone limits and a VERP program could have long-term, moderate to major, beneficial impacts to archeological resources and local, long-term, negligible, adverse impacts depending on the management action taken.

Impacts in Wawona. Archeological resources for Wawona include historic and prehistoric sites and districts that relate to homesteading, long-term and seasonal occupation, early tourism, the U.S. Cavalry, historic roads and trails, and early park administration.

Implementation of management zone limits for Wawona would require management to enforce limits on the number of people in each zone. Actions taken to reduce visitor numbers in various zones could include removing parking areas or trails, temporarily or permanently closing certain areas, or requiring permits or reservations for access to certain areas. Enforced management zone limits would likely result in a local, long-term, moderate, beneficial effect on archeological resources compared to the No Action Alternative.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. Education efforts would likely result in local, long-term, negligible to minor, benefits to archeological resources as discussed above. More restrictive measures would result in short-term or long-term, moderate, beneficial impacts to archeological resources. However, the effect of new development on archeological resources within the Wawona segments would vary depending on the nature of the development and its proximity to archeological sites. All development would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement.

Summary of Alternative 4 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement and federal laws such as the National Historic Preservation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Under Alternative 4, overall visitor numbers in the future would likely be lower than under Alternative 1. Management zone limits and VERP management actions taken to protect ORVs and other resources would result in less congestion and crowding, which is likely to provide benefits to archeological resources within the corridor due to fewer visitor-related impacts such as trampling, erosion, surface collection, and vandalism. If restrictive management actions are required to achieve these conditions, there would be moderate benefits to archeological resources related to an improved natural environment. Management zones in El Portal that allow for lower levels of development than the No Action Alternative would have a long-term, moderate to major, beneficial, effect on archeological resources. These management actions would reduce the likelihood of visitor-related damage to cultural resources compared to Alternative 1, resulting in long-term, beneficial effects on archeological resources.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1.

Overall these cumulative actions in combination with Alternative 4 could have a net long-term, moderate, adverse impact on archeological resources within the Merced River corridor.

Impairment

Impacts associated with Alternative 4 are not expected to impair the park's archeological resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Traditional Cultural Resources

Analysis

The following discussion provides an overview of the types of impacts to traditional cultural resources that could occur within each segment of the Merced River corridor under Alternative 4 from implementation of management zone limits and a VERP program. Effects on cultural resources due to the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas with known traditional cultural resources and directing them to other areas outside of the Merced River corridor could have an adverse effect on resources outside the corridor. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to sensitive resources in other areas of the park as a result of redirection is expected to be negligible to minor, and adverse.

Impacts in Wilderness. Traditional cultural resources include continuing uses such as the travel/trade routes connecting the east and west slopes of the Sierra Nevada range.

User capacity within wilderness areas of Yosemite National Park is addressed through a trailhead quota system and monitoring of wilderness resource conditions. The management zone limits for the Wilderness segments would be set at the existing trailhead quota system numbers. Implementation of the VERP monitoring and management program for the wilderness areas would result in additional monitoring of indicators within wilderness areas, as described under Alternative 2.

Since the management zone limits would be set at existing trailhead quota system levels, no additional management actions would need to be taken to implement the limits in the wilderness areas. Implementation of the management zone limits in wilderness would have no effect on

traditional cultural resources within Wilderness segments compared to the No Action Alternative.

Implementation of VERP under Alternative 4 would have the same effects as described under Alternative 2. Education efforts are expected to result in local, short and long-term, negligible, beneficial impacts on traditional cultural resources. More restrictive measures are expected to have local, long-term, negligible, beneficial effects on traditional cultural resources due a potential decrease in degradation of archeological deposits.

Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quotas in response to VERP monitoring would likely have a local, long-term, negligible, adverse impact on traditional cultural resources due to a potential reduction in American Indian access to these resources.

Impacts in Yosemite Valley. Traditional cultural resources in Yosemite Valley encompass many natural and cultural features throughout the Valley that are traditionally valued by local American Indian groups. These resources include, but are not limited to, gathering areas, religious sites, village sites, and cemeteries.

Management zone limits for the Yosemite Valley segment would require the park to manage visitor levels within the Valley to ensure that the limits for each management zone are not exceeded. If the limits are exceeded, management would take actions to reduce visitor numbers in that zone. Management actions could include visitor education regarding different areas to visit, closure of certain areas, removal of trails and or parking that facilitates access to certain areas, removal of other visitor facilities that might encourage use (such as picnic tables and/or restrooms), and requiring permits or reservations for accessing certain areas within the Valley.

These management actions would result in a local, long-term, moderate, beneficial effect on traditional cultural resources within Yosemite Valley, because these measures are likely to lower visitor levels in the long term, and would therefore decrease visitor-related damage (such as vandalism, erosion, and trampling) compared to the No Action Alternative. American Indian access to these resources would continue to be guided by the park's agreements with the tribes, such as the Agreement between the National Park Service, Yosemite National Park, and American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities (NPS 1997a). Therefore these measures could result in a local, short-term or long-term, moderate to major, beneficial impact on traditional cultural resources through resource protection.

The effects of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures would likely result in local, short and long term, negligible to minor, beneficial effects on traditional cultural resources. More restrictive measures would benefit the traditional cultural resources by reducing opportunities for resource degradation such as trampling and erosion. American Indian access to these resources would continue to be guided by the park's agreements with the local American Indian groups. Therefore these measures could result in short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Overall, implementation of the proposed user capacity program with management zone limits and VERP monitoring is expected to have a moderate benefit to traditional cultural resources. Where these goals are achieved through education, the effect on traditional cultural resources is

expected to be long-term, negligible, and beneficial. Management actions that result in long-term, broad based restrictions could have long-term, moderate to major, beneficial impacts or minor adverse impacts to traditional cultural resources.

Impacts in the Gorge. Traditional cultural resources in the Gorge segment include gathering areas and villages.

Management zone limits for the Gorge segment would be set based on management zoning and available parking. The National Park Service would manage the number of visitors in the Gorge to ensure that the management zone limits are not exceeded. If the limits are exceeded, management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, management could reduce parking in the Gorge to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park, or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge segment.

The results of these management actions would depend on the action taken. Since existing use levels of the Gorge are relatively low, management actions that reduce available access to the Gorge, such as removal of parking areas, would likely result in local, long-term, negligible beneficial effects on traditional cultural resources due to a return to the natural environment and a reduced likelihood of visitor-related damage.

Implementation of the management zone limits would be expected to result in negligible effects in the short term because existing use in these areas is relatively low. In the long term, the level of use under this alternative would be lower than under the No Action Alternative. Since current use levels are low and there are few crowding problems, this reduction of use would provide local, long-term, negligible benefits to traditional cultural resources in the Gorge segment compared to the No Action Alternative.

The effects of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures would likely result in local, short and long term, negligible to minor, beneficial effects. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation such as trampling and erosion. American Indian access to these resources will continue to be guided by the park's agreements with the local American Indian groups. Therefore, these measures could result in local, short-term or long-term, moderate, beneficial impacts to traditional cultural resources through resource protection.

Overall, Alternative 4 is expected to have a moderate benefit to traditional cultural resources. Where educational measures are implemented, the effect on traditional cultural resources is expected to be long term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions could have long-term, moderate to major, beneficial impacts or minor adverse impacts to traditional cultural resources.

Impacts in El Portal. Traditional cultural resources in El Portal consist of, but are not limited to, gathering areas, cemeteries, geological features of traditional spiritual importance, and prehistoric and historic village sites. Like Yosemite Valley, contemporary associated tribes consider all of El Portal to be a traditional use area.

The boundary for the El Portal segment of the river under Alternative 4 would be based on the locations of specific ORVs, with primarily low-density zoning, except in limited existing developed areas. Under this alternative, there would be Open Space (2A) and Discovery (2B) zoning south of the river except in the Trailer Village/Abbieville area, which would be zoned Park Operations and Administration (3C). North of the river would be zoned 2B except for the pockets of existing development such as Railroad Flat, Rancheria, Middle Road and Old El Portal, which would be zoned 3C.

In the areas zoned Park Operations and Administration (3C), additional development of facilities or removal of facilities could occur. If this development or removal occurred, then traditional cultural resources, which are identified as a component of the cultural ORV, could be disturbed. This is considered a local, long-term, minor to major, adverse impact. The intensity of impact would depend on the nature, location, and design of the facility to be developed or removed as well as the quantity of the traditional cultural resource(s) affected. These actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and in consultation with associated American Indians groups. If the construction of proposed new facilities temporarily leads employees or visitors closer to traditional cultural resources, the effect would be local, short term, minor, and adverse. If the facilities increase visitor or employee exposure to traditional cultural resources, the effect could be local, long-term, minor, and adverse. Conversely, if the proposed new facilities avoid traditional cultural resources and reduce visitor- or employee-related damage to these resources, the 3C management zoning could have a local, long-term, negligible to minor, beneficial impact. When compared to the other alternatives, Alternative 4 would have less adverse impacts to traditional cultural resources because fewer acres would be zoned (3C). In this alternative, there would be less additional development or redevelopment within most areas of the El Portal segment, resulting in less potential for impacts to traditional cultural resources.

New development would also be subject to the consistent set of criteria and considerations adopted in the Merced River Plan, as well as current park management policies. These management policies guide how actions could be implemented to minimize adverse effects to cultural resources. Because the Alternative 4 corridor boundary is smaller than in Alternatives 2 and 3, this alternative may be excluding currently unidentified traditional cultural resources that may be located outside of the boundary. All ORVs must be protected on a segmentwide basis regardless of the zoning designation or whether the resources are in or outside of the river corridor boundary. Therefore, the adverse effect of new development on traditional cultural resources within the El Portal segment would likely be, long term, and negligible.

In general, Alternative 4 would have a local, long-term, moderate to major, beneficial effect on traditional cultural resources compared to Alternative 1, which would have a smaller river corridor and less protective management zoning.

Implementation of management zone limits for the El Portal segment are expected to have negligible effects on traditional cultural resources in the short term due to low levels of visitor use. In the long term, enforcement of management zone limits for this segment could limit future development, require removal of existing informal parking areas, or require additional restrictions on visitor activities such as rafting, kayaking, or fishing. Implementation of these types of measures would likely have local, long-term, minor to moderate, beneficial effects on traditional cultural resources.

Implementation of a VERP program under Alternative 4 would have the same effects described under Alternative 2. Educational measures would likely result in local, short- and long-term, negligible to minor, beneficial effects. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation such as trampling and erosion. American Indian access to these resources would continue to be guided by the park's agreements with the tribes. Therefore, these measures could result in local, short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Overall, local, short- and long-term, negligible to minor, adverse impacts to traditional cultural resources and local, short- and long-term, minor to moderate, beneficial impacts on traditional cultural resources could occur as a result of future actions that could be implemented under the proposed management zoning. However, adverse effects would be reduced in intensity under Alternative 4 by the application of zoning within the larger river corridor boundary (as compared to Alternative 1). The implementation of management zone limits and a VERP program could have long-term, moderate, beneficial impacts or long-term, minor, adverse impacts to traditional cultural resources, depending on the management action taken.

Impacts in Wawona. Traditional cultural resources in Wawona include gathering areas, cemeteries, and village sites.

Implementation of management zone limits for the Wawona segments would require park management to enforce limits on the number of people in each zone. Actions to reduce visitor numbers in various zones could include removing parking or trails, temporarily or permanently closing certain areas, or requiring permits or reservations for access to certain areas. American Indian access to these resources would continue to be guided by the park's agreements with the tribes. Therefore, enforcing management zone limits would result in a local, long-term, moderate, beneficial effect on traditional cultural resources compared to the No Action Alternative.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. Educational efforts would likely result in local, long-term, negligible to minor benefits to traditional cultural resources. More restrictive measures would benefit traditional cultural resources by reducing opportunities for resource degradation. American Indian access to these resources would continue to be guided by the park's agreements with local American Indian groups. Therefore, these measures could result in local, short-term or long-term, moderate to major, beneficial impacts to traditional cultural resources through resource protection.

Summary of Alternative 4 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement; the 1997 Agreement between the National Park Service, Yosemite National Park, and the American Indian Council of Mariposa County, Inc. for Conducting Traditional Activities; and federal laws such as the National Historic Preservation Act, American Indian Religious Freedom Act, and Native American Graves Protection and Repatriation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Implementation of management zone limits and various VERP management actions are expected to result in improvements of natural and cultural conditions within the river corridor. Under Alternative 4, overall visitor numbers in the future would likely be lower than under Alternative 1. Management zone limits and VERP management actions to protect ORVs and other resources

would likely result in less congestion and crowding. The improvements to the natural setting and reduced crowding and congestion are expected to provide benefits to traditional cultural resources within the river corridor. If restrictive management actions are required to achieve these natural and social conditions, there would be moderate benefits to traditional cultural resources related to an improved natural environment. Management zones in El Portal that allow for lower levels of development than the No Action Alternative would have a long-term, moderate to major, beneficial, effect on traditional cultural resources.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1. Overall these cumulative actions in combination with Alternative 4 could have a net long-term, minor, beneficial impact on traditional cultural resources within the Merced River corridor. They could also result in a long-term, minor, adverse impact due to increased development and visitor-related damage.

Impairment

Because impacts to traditional cultural resources are primarily beneficial, Alternative 4 is not expected to impair the park's traditional cultural resources for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Historic Sites, Structures, and Landscapes

Analysis

The following discussion provides an overview of the types of impacts to historical sites, structures, and landscapes that could occur within each segment of the Merced River corridor under Alternative 4 from implementation of management zone limits and a VERP program. Effects on these resources resulting from the proposed corridor boundary and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Historic sites, structures, and landscapes in the Yosemite Wilderness include the Merced Lake High Sierra Camp, John Muir Trail, remains of the original Yosemite Grant boundary fence, U.S. Cavalry trails, and sites associated with early stock grazing.

User capacity within wilderness areas of Yosemite National Park is addressed through a trailhead quota system and monitoring of wilderness resource conditions. The management zone limits for the Wilderness segments would be set at the existing trailhead quota system numbers. Implementation of the VERP program for the Wilderness segments would result in additional monitoring of indicators within wilderness areas, as described under Alternative 2.

Since the management zone limits would be set at existing trailhead quota system levels, no additional management actions would be needed to implement the limits in the Wilderness segments. Implementation of the management zone limits in wilderness would have no effect on historic sites, structures, and landscapes within Wilderness segments compared to Alternative 1.

Under Alternative 4, the effects of the VERP program in the wilderness would be the same as described under Alternative 2. Educational efforts are expected to result in local, short- and long-term, minor, beneficial impacts to historic resources. If VERP monitoring indicates that more restrictive measures that reduce wilderness use are needed (such as reducing trailhead quotas, restricting stock use, and limiting day-use access in heavily used areas to users with permits or guided groups), there would be local, long-term, negligible to minor, beneficial effects on historic sites, structures, and landscapes due to a potential decrease in visitor-related damage, such as trampling, vandalism, and wear and tear.

Implementation of restrictive measures that reduce wilderness use beyond the existing trailhead quota system in response to VERP monitoring is expected to have a local, long-term, negligible to minor, beneficial impact on historic sites, structures, and landscapes due to a potential reduction in visitor-related damage to these resources.

Impacts in Yosemite Valley. Historic sites, structures, and landscapes in Yosemite Valley include the Yosemite Valley Historic District, which consists of historic bridges, a campground, orchards, trails, roads, residences, administrative facilities, and visitor accommodations. This district includes the Yosemite Village Historic District and the Curry Village Historic District. The Valley also contains several National Register-eligible or -nominated historic buildings and three National Historic Landmarks: the LeConte Memorial Lodge, the Ranger's Club, and The Ahwahnee.

Management zone limits for the Yosemite Valley segment would require the park to manage visitor use within the Valley to ensure that the limits for each management zone are not exceeded. If visitor numbers exceed the limits, management would take actions to reduce visitor numbers in that zone. Management actions could include visitor education regarding different areas to visit, closure of certain areas, removal of trails and or parking that facilitate access to certain areas, removal of other visitor facilities that might encourage use (such as picnic tables and/or restrooms), and requiring permits or reservations for accessing certain areas within the Valley.

These management actions would result in a local, long-term, moderate, beneficial effect on historical sites, structures, and landscapes because these measures would likely result in lower visitor levels in the long term, and would therefore decrease visitor-related damage (such as vandalism, erosion, and trampling) compared to the No Action Alternative.

In addition to managing visitor numbers within the Valley, park management would implement VERP. The effects of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures are expected to result in local, short and long term, negligible to minor, beneficial effects on historic sites, structures, and landscapes. More restrictive measures would result in short-term or long-term, moderate, beneficial impacts to historic sites, structures, and landscapes. Site hardening could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, these actions would be subject to site-specific planning and compliance and undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the Yosemite Valley design

guidelines (NPS 2004c). If the design is compatible with the historic character of the landscape, and if the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, implementation of management zone limits and a VERP program is expected to have a minor to moderate benefit to historic sites, structures, and landscapes by reducing the likelihood of visitor-related damage to these resources. Where educational measures are implemented, the effect is expected to be long term, negligible, and beneficial. Management actions that result in long-term, broad-based restrictions could have long-term, moderate, beneficial impacts to these resources. Other actions, such as site hardening, could have long-term, minor to moderate, adverse effects or long-term, moderate, beneficial effects on historic sites, structures, and landscapes.

Impacts in the Gorge. Historic sites, structures, and landscapes in the Gorge segment include the Merced Canyon Travel Corridor, and the remaining structures associated with the Yosemite Valley Hydroelectric Power Plant.

Management zone limits for the Gorge segment would be based on the management zoning and available parking. The National Park Service would manage the number of visitors in the Gorge to ensure that the management zone limits are not exceeded. If the limits are exceeded, park management would take actions to reduce visitor numbers. Since access to the Gorge is limited by the available parking, management could reduce parking to reduce use levels. Management actions could also include instituting a day-use reservation program for entry into the park, or instituting entrance station closures when the limit is reached. These measures would control the overall number of people able to access the Gorge segment.

Implementation of the management zone limits would be expected to result in negligible effects in the short term because existing use in the Gorge segment is relatively low. In the long term, the level of use under Alternative 4 would likely be lower than under the No Action Alternative. Since current use levels are low and there are few crowding problems, this reduction of use would provide local, long-term, negligible, benefits to historic sites, structures, and landscapes in the Gorge.

The effects of VERP under Alternative 4 would be the same as described under Alternative 2. Educational measures are expected to result in local, short and long term, negligible to minor beneficial effects. More restrictive measures would result in short-term or long-term, moderate to major, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, these actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations and mitigation measures in the park's 1999 Programmatic Agreement and the Yosemite Valley design guidelines. If the design is compatible with the historic character of the landscape and the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, minor, beneficial effect on these resources.

Overall, Alternative 4 is expected to have a negligible to minor benefit to historic sites, structures, and landscapes by reducing the likelihood of visitor-related damage to these resources. Where these goals are achieved through education, the effect would be long term, negligible and

beneficial. Management actions that result in long-term, broad based restrictions could have long-term, moderate to major, beneficial impacts to these resources. Other actions, such as site hardening, could have long-term, minor to moderate, adverse effects or long-term, moderate, beneficial effects on historic sites, structures, and landscapes.

Impacts in El Portal. Historic sites, structures, and landscapes in El Portal consist of the Old El Portal cultural landscape, the Murchison (National Lead Company) structures, railroad houses, the chapel, the old store, the El Portal Market, the old hotel (Yosemite Institute administrative offices), Bagby Station, and other sites and structures related to early industry, homesteading, and tourism in the Merced corridor. Some of these structures are privately owned or used only as National Park Service or park partner's administrative facilities. Because these structures are not open to the public, they are unlikely to experience adverse effects from visitor use.

The boundary for the El Portal segment of the river in this alternative was based upon the locations of specific ORVs with primarily low-density zoning, except in limited currently developed areas. Under Alternative 4, there would likely be less additional development or redevelopment within most areas of the El Portal segment, thus resulting in less potential for impacts to historic sites, structures, and landscapes. h has a smaller river corridor.

The proposed boundary and zoning designations for the El Portal segment under Alternative 4 would allow redevelopment within the areas zoned Park Operations and Administration (3C), but the Open Space (2A) and Discovery (2B) zoning that dominates the segment would substantially limit development potential in El Portal. This development north of the river could result in an adverse effect. However, the potential actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and 2004 design guidelines. Therefore, the adverse effects of new development would likely be local, long term, and negligible to minor. Conversely, if the design is compatible with the historic landscape character and the new facilities reduce the likelihood of visitor- or employee-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

The Open Space (2A) and Discovery (2B) zoned areas south of the river is characterized by quiet and natural areas. Only limited development would be appropriate in these zones. Because this intended use is similar to the current use of the area, no impacts are likely to occur compared to the No Action Alternative.

Overall, the river corridor boundary and management zoning for Alternative 4 would have a local, long-term, moderate, beneficial effect to these resources compared to the No Action alternative.

Implementation of management zone limits for the El Portal segment are expected to have negligible effects on historic sites, structures, and landscapes in the short term due to low levels of visitor use. In the long term, enforcement of management zone limits for this segment could limit future development, require removal of existing informal parking areas, or require additional restrictions on visitor activities such as rafting, kayaking, or fishing. Implementation of these types of measures would be expected to have local, long-term, minor, beneficial effects on these resources.

Implementation of VERP within this segment would be the same as described under Alternative 2. Educational measures would be expected to result in local, short- and long-term, negligible to

minor, beneficial effects. More restrictive measures could result in short- or long-term, moderate to major, beneficial impacts to historic sites, structures, and landscapes. Site hardening could result in adverse effects on historic landscapes if the new design is incompatible with the character of the landscape. However, the potential actions would be subject to site-specific planning and compliance and would be undertaken in accordance with the stipulations in the park's 1999 Programmatic Agreement and 2004 design guidelines. Therefore, the adverse effects of new development would likely be local, long term, and negligible to minor. If the design is compatible with historic landscape character and the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, moderate, beneficial effect on these resources.

Overall, local, long-term, minor, adverse impacts and local, short- and long-term, moderate, beneficial impacts on historic sites, structures, and landscapes could occur as the result of future actions that could be implemented under the proposed zoning. Adverse effects would be reduced in intensity under Alternative 4 by the application of zoning within the larger river corridor boundary (as compared to Alternative 1). The implementation of management zone limits and a VERP program could have long-term, moderate, beneficial impact to historic sites, structures, and landscapes and local, long-term, negligible to minor, adverse impacts depending on the management action taken.

Impacts in Wawona. Historic sites, structures, and landscapes in Wawona include the Washburn cultural landscape, the Chowchilla Mountain Road, Civilian Conservation Corps structures, the Wawona Covered Bridge, the Wawona Hotel (a National Historic Landmark), and the Pioneer Yosemite History Center. Many relocated, individually listed National Register historic structures comprise the Pioneer Yosemite History Center.

Implementation of management zone limits for Wawona segments would require management to enforce limits on the number of people in each zone. Actions taken to reduce visitor numbers in various zones could include removal of parking and trails, temporary or permanent closure of certain areas, or a requirement for permits or reservations for access to certain areas. Enforcement of the management zone limits would likely result in a local, long-term, moderate, beneficial effect on historic sites, structures, and landscapes compared to the No Action Alternative.

Implementation of the VERP program under Alternative 4 would have the same effects described under Alternative 2. Educational measures are expected to result in local, short and long term, negligible to minor beneficial effects on historic sites, structures, and landscapes. More restrictive measures would result in short-term or long-term, minor to moderate, beneficial impacts to historic sites, structures, and landscapes. Site-hardening activities could result in adverse effects on historic landscapes, but any new design would be compatible with the historic landscape character. If the new facilities reduce the likelihood of visitor-related damage to historic sites, structures, and landscapes, then site-hardening activities could have a local, long-term, minor to moderate, beneficial effect on these resources.

Summary of Alternative 4 Impacts. Compliance with existing park policies including the 1999 Programmatic Agreement, Yosemite National Park design guidelines, and federal laws such as the National Historic Preservation Act would help ensure that the cultural ORVs in each river segment are being protected and enhanced.

Under Alternative 4, overall visitor numbers in the future would likely be lower than under Alternative 1. Management zone limits and management actions taken to protect ORVs and other resources would result in less congestion and crowding. VERP would provide a suite of data to help monitor and preserve historic sites, structures, and landscapes. The improvements to the natural and cultural setting and reduced crowding and congestion would likely provide benefits to historic sites, structures, and landscapes within the corridor due to a decrease in visitor-related impacts such as vandalism, erosion, and wear and tear. If restrictive management actions are required to achieve these natural and social conditions, there would be moderate benefits to these resources, due to a reduction in visitor-related damage. Management zones in El Portal that allow for lower levels of development than the No Action Alternative would have a long-term, moderate, beneficial, effect on historic sites, structures, and landscapes.

Cumulative Impacts

A detailed discussion of impacts from past, present, and future projects is provided under Alternative 1. Overall, these cumulative actions in combination with Alternative 4 could have a net long-term, moderate, adverse impact on historic sites, structures, and landscapes within the Merced River corridor.

Impairment

Because adverse impacts to historic sites, structures and landscapes are expected to be negligible, Alternative 4 would not impair the park's historic sites, structures, and landscapes for future generations.

National Historic Preservation Act Section 106 Summary

Under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) that address the criteria of effect and adverse effect, the user capacity program and the El Portal boundary and zoning designations proposed under this alternative would allow (but do not prescribe) actions that have the potential to adversely affect significant properties. The National Park Service has determined that selection of this alternative would result in no adverse effect to historic properties listed in or eligible for listing in the National Register of Historic Places, because the plan does not prescribe specific action. Future actions that are allowed under the proposed alternative would undergo environmental review to determine potential effects on historic properties.

Visitor Experience

Analysis

The following discussion provides an overview of the types of impacts to recreation, interpretation and orientation, visitor services, and wilderness experience that could occur within each segment of the Merced River corridor under Alternative 4. The analysis for the El Portal segment also describes the types of impacts to visitor experience that could occur based on the adoption of a river corridor boundary that closely follows the location of ORVs.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on the visitor experience. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to the visitor experience associated with redirection of visitors would be short-term, and variable in

location. Therefore, potential impacts to the visitor experience are expected to be minor to moderate, and adverse.

Recreation

Analysis

The following discussion provides an overview of the types of impacts to recreational resources that could occur within each segment of the Merced River corridor under Alternative 4. Effects on recreation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Recreation ORVs in the Wilderness segment include outstanding opportunities for solitude along the river, primitive and unconfined recreation, and recreational opportunities such as day hiking, backpacking, horseback riding and packing, camping, and the enjoyment of natural river sounds.

User capacity within wilderness areas of Yosemite National Park is currently addressed through trailhead quotas and monitoring of wilderness resource conditions. The management zone limits for the Wilderness segments would be set at the existing trailhead quota numbers and would not affect access to wilderness areas. Since access to wilderness areas is already limited, the annual visitor limit would not affect it.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2.

Implementation of Alternative 4 in wilderness areas would be expected to have a local, long-term, minor to moderate, beneficial impact on the recreational experience in terms of opportunities for solitude, and a local, long-term, moderate to major, adverse effect on some visitors' access to wilderness areas through trailhead quota reductions or restrictions on day visitors in wilderness areas. These restrictions would be designed to maintain the spectrum of recreational opportunities, although levels of use may be reduced. Although the potential for decreased access would adversely affect some visitors, overall the protection of the wilderness resources and the solitude of the wilderness experience would be expected to result in protection of the recreation ORVs.

Impacts in Yosemite Valley. Management zone limits for the Yosemite Valley segment were set based on the management zoning for the area, available facilities, and existing levels of use. Park management would manage visitor use within the Valley to ensure that the limits for each management zone are not exceeded. Management of use levels in various zones could require reservations for use of certain areas or controls on access (fencing, entrance stations) to more popular areas. This would result in a much more rigid and controlled visitor experience and could result in limiting visitor numbers in each of the various zones within the river corridor, which would result in a local, long-term, major, adverse effect on visitor experience. The annual maximum visitor limit for the corridor could also reduce future visitor use in the Valley compared to the No Action Alternative, resulting in potential benefits to visitor experience from reduced crowding, and potential adverse effects related to reduced access.

In addition to managing visitor numbers within each management zone, park management would implement the VERP program as described for Alternative 2.

Overall, implementation of the existing user capacity program, supplemented with management zone limits and VERP is expected to benefit the visitor experience by reducing traffic congestion and crowding, and conserving the natural and cultural environment, resulting in a minor to major beneficial effect (depending upon the management actions). The change in the level of management control over visitors and restrictions of visitor access to various management zones would result in local, long-term, major, adverse effects on visitor experience. Therefore, implementation of Alternative 4 would be expected to result in more adverse effects on recreation and visitor experience, as compared to Alternative 1.

Impacts in the Gorge. Management zone limits for the Gorge segment are based on the management zoning for these areas as well as available parking. Park management would manage the number of visitors in each management zone to ensure that the limits are not exceeded. Management of use levels in various zones could require reservations for use of certain areas or controls on access to more popular areas. This would result in a much more rigid and controlled recreation experience for visitors to the gorge, resulting in a local, long-term, major, adverse effect on recreation and the visitor experience. The annual maximum visitor limit for the corridor could also reduce future visitor use in the gorge compared to Alternative 1, resulting in potential benefits to visitor experience from reduced crowding, and potential adverse effects related to reduced access.

In addition to managing visitor numbers within each management zone, the park would implement the VERP program as described for Alternative 2.

Overall, implementation of management zone limits with the VERP program within the Gorge segment would be expected to result in local, long-term, negligible to minor, beneficial impacts on visitor experience related to reduced crowding and reduced impacts to the natural environment. Management actions addressing VERP standards and enforcing management zone limits would result in local, long-term, major, adverse impacts on recreation due to the increased management control over visitor activities and movement between management zones.

Impacts in El Portal. The boundary for the El Portal segment of the river in Alternative 4 was closely based upon the location of identified ORVs in El Portal. The zoning under Alternative 4 results in few areas being zoned for additional administrative development (3C) and proposes one of the lowest density zoning classifications, Open Space (2A), for much of the area south of the Merced River and east of the levee. The zoning classification for other nondeveloped areas would be Discovery (2B), which allows only very limited facility development. The existing commercial raft launch site west of Foresta Bridge would be inconsistent with the proposed Discovery zoning, and could be removed in the future. Overall, Alternative 4 would likely result in less future development in El Portal and could result in the removal of the commercial raft launch facility. Whitewater rafting is one of the recreation activities specifically addressed in the recreation ORVs for this segment. The effect on recreation access and the recreation ORVs would likely be local, long-term, moderate to major, and adverse due to the loss of the raft launch facility.

Implementation of management zone limits for the El Portal segment would be expected to have negligible effects on recreational access and use in the short term due to low levels of visitor use. In the long term, enforcement of management zone limits for this segment could result in restrictions on visitor use and access, as well as having an adverse effect on the quality of the visitor experience related to the increased level of control over visitor use of the area. These changes would be expected to have a local, long-term, minor to major, adverse effect. The annual

maximum visitor limit for the corridor could also reduce future visitor use in El Portal compared to the No Action Alternative, resulting in potential benefits to visitor experience from reduced crowding, and potential adverse effects related to reduced access.

Implementation of the VERP component of Alternative 4 would have the same effects as described for Alternative 2.

Implementation of Alternative 4 would be expected to have local, long-term, moderate to major, adverse effects on recreational access and the recreation ORVs, due to the loss of the commercial raft launch, and increases in restrictions and management controls.

Impacts in Wawona. Implementation of management zone limits for Wawona would require management to enforce limits on the number of visitors in each zone. Management of capacities in each management zone would require monitoring and limiting visitor use of each area, resulting in a much more rigid and controlled visitor experience within the corridor, which would be a local, long-term, moderate to major, adverse effect. Implementation of the VERP component of Alternative 4 would have the same effects as described for Alternative 2.

Overall, implementation of the proposed user capacity program with management zone limits and VERP is expected to benefit the visitor experience by reducing traffic congestion and crowding, and conserving the natural and cultural environment. The change in the level of management control over visitors and restrictions of visitor access to various management zones would result in local, long-term, moderate to major, adverse effects on visitor experience. The annual maximum visitor limit for the corridor could also reduce future visitor use in Wawona compared to the No Action Alternative, resulting in potential benefits to visitor experience from reduced crowding, and potential adverse effects related to reduced access.

Therefore, implementation of Alternative 4 would be expected to result in more adverse effects on recreation and visitor experience compared Alternative 1.

Summary of Alternative 4 Impacts. Implementation of management zone limits and an annual corridorwide visitor limit, along with the VERP program, would be expected to result in additional restrictions on visitor access to various management zones and lower overall visitor levels in the long term. These restrictions would be designed to maintain the spectrum of recreational opportunities, but could limit the use level of some activities. Management of visitor use by management zone would also result in a much more rigid and controlled visitor experience within the river corridor, and the proposed zoning in El Portal would be inconsistent with the existing raft launch. Therefore, Alternative 4 would have a local, long-term, major, adverse effect on visitor experience compared to Alternative 1.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are summarized under Alternative 1. These cumulative projects would be expected to result in local, long-term, negligible to minor benefits because the beneficial impacts associated with increased visitor access and expanded recreational opportunities would be partially offset by the adverse impacts associated with the removal of specific recreational opportunities.

Alternative 4 together with the cumulative projects would be expected to have both long-term beneficial and adverse effects on recreation, visitor experience, and the recreation ORVs.

Implementation of management zone limits and VERP would have beneficial effects on visitor experience through reduced crowding and traffic congestion and improvements in the natural setting. Implementation of the management zone limits would also result in additional restrictions on visitor use and access to various management zones, resulting in a much more rigid and controlled visitor experience. Overall, the cumulative effect would be expected to be local, long-term, major, and adverse.

Interpretation and Orientation

Analysis

The following discussion provides an overview of the types of impacts to interpretation and orientation that could occur within each segment of the Merced River corridor under Alternative 4. Effects on recreation from the proposed corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Impacts in Wilderness. Management zone limits for wilderness areas would be set at existing trailhead quotas and would not affect existing interpretive programs in wilderness areas. Since access to wilderness areas is already limited, the annual visitor limit would not affect it.

Implementation of the proposed user capacity program with VERP in wilderness areas would be the same as described in Alternative 2. This could result in a local, short- or long-term, negligible to minor, adverse effect on visitor experience from reduced access to interpretative programs in wilderness areas compared to the opportunities under the No Action Alternative. There would be a local, short- and long-term, negligible to minor, adverse effect from reduced access to interpretive programs compared to Alternative 1.

Impacts in Yosemite Valley. Implementation of management zone limits in Yosemite Valley and the annual maximum visitor limit for the corridor could reduce visitor access to some interpretive programs within more popular areas. Most interpretive programs currently offered by park rangers and park partners would likely continue in Yosemite Valley, although the locations of programs and the size of groups served could change. The impact of these changes would be expected to be local, long-term, minor, and adverse.

Implementation of the VERP program in Yosemite Valley would be the same as described for Alternative 2. Overall, changes in interpretative programs and orientation could result in local, long-term, minor, adverse impacts on visitor experience if restrictions are implemented that would limit the frequency and size of ranger-led walks and access to other interpretive programs compared to Alternative 1.

Impacts in the Gorge. No interpretive programs are currently offered in the gorge. Implementation of management zone limits, the annual visitor limit for the corridor, and the VERP program would not be expected to change this. Alternative 4 would not impact interpretation and orientation compared to Alternative 1.

Impacts in El Portal. Limited interpretive programs are currently offered in El Portal. The proposed corridor boundary and zoning configuration would not be expected to result in additional interpretive programs on National Park Service lands in EL Portal, but would also not adversely affect the existing interpretive program on private lands. Therefore, there is not expected to be an impact on interpretation and orientation compared to Alternative 1. Similarly,

due to the low level of visitor use in El Portal, implementation of management zone limits, the maximum annual visitor limit for the corridor, and the VERP program would not be expected to result in any impacts to orientation and interpretation compared to Alternative 1.

Impacts in Wawona. Implementation of management zone limits in Wawona would not likely change the availability of or access to interpretive programs in the short run. In the long term, management zone limits and the annual visitor limit for the corridor could reduce visitor access to interpretive programs in the future, particularly if management zone limits for popular areas, such as the Pioneer Yosemite History Center, result in future potential visitors being turned away.

Implementation of the VERP program in Wawona would be the same as described for Alternative 2. Overall, the impacts to interpretive and orientation programs in Wawona under Alternative 4 would be expected to be local, long-term, minor, and adverse due to decreased opportunities to access these programs.

Summary of Alternative 4 Impacts. Alternative 4 could have local, long-term, minor, adverse impacts on visitor experience if management zone limits or management actions taken under VERP reduce access to and availability of interpretation and orientation programs and services. The impact could be local, long-term, negligible, and beneficial if management actions taken to increase education result in increased access to and availability of interpretation and orientation programs. The overall impact to these programs is expected to be negligible to minor, and adverse.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. These cumulative projects would have a long-term, minor, beneficial impact, because the beneficial impacts associated with an increase in interpretation and orientation programs and services would only be partially offset by the potential decrease in wilderness programs.

Alternative 4 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, negligible, adverse impact because the availability and diversity of interpretation and orientation programs and services would increase through some of the cumulative projects, but Alternative 4 could result in management actions that reduce access to and availability of interpretation and orientation programs and services.

Visitor Services

Analysis

The following discussion provides an overview of the types of impacts to visitor services that could occur within each segment of the Merced River corridor under Alternative 4. Effects on visitor services from the proposed corridor boundary and zoning in El Portal under Alternative 4 are also addressed for the El Portal segment.

Impacts in Wilderness. Management zone limits for wilderness areas would be set at existing trailhead quotas and would not be expected to result in any changes to visitor services in wilderness areas as compared to Alternative 1. Since access to wilderness areas is already limited, the annual visitor limit would not affect it.

Implementation of the VERP program under Alternative 4 would be the same as described under Alternative 2. Since wilderness areas currently have low levels of visitor services, Alternative 4 would likely result in local, short- or long-term, minor, adverse effects on visitor experience through reduced services and opportunities in wilderness areas.

Impacts in Yosemite Valley. Implementation of management zone limits in Yosemite Valley would require park management to control and limit visitor use in each area in accordance with the management zone limits. This would result in a much more rigid and controlled visitor experience and could result in limiting visitor numbers in various zones within the river corridor. In addition, the corridorwide annual visitor limit could reduce visitor access to visitor services compared to Alternative 1. These measures could result in a local, long-term, minor, adverse effect on access to visitor services in Yosemite Valley.

The VERP component of Alternative 4 would be the same as described for Alternative 2. Therefore, the overall impacts of Alternative 4 on provision of and access to visitor services would be expected to be local, long-term, minor, and adverse.

Impacts in the Gorge. Implementation of management zone limits within the Gorge segment and the annual maximum visitor limit for the corridor would not be expected to result in substantive changes to use levels, due to the existing low use levels. Implementation of management zone limits would result in more management controls over use of specific areas in the gorge, however, resulting in a local, long-term, negligible to minor, adverse effect on access to the limited facilities in the gorge. Implementation of VERP under Alternative 4 would result in the same effects as described for Alternative 2. Therefore, the overall impacts of Alternative 4 on provision of and access to visitor services would be expected to be local, long-term, negligible to minor, and adverse.

Impacts in El Portal. Visitor services available in El Portal are largely run by private businesses (e.g., lodging, restaurants, etc.) and are located on private lands adjacent to the El Portal Administrative Site. Implementation of the proposed corridor boundary and the restrictive zoning under Alternative 4 would not result in any change to visitor services on National Park Service lands in El Portal. Similarly, implementation of management zone limits, the maximum annual limit for the corridor, and VERP would not be expected to affect privately provided visitor services in the area.

Impacts in Wawona. Under Alternative 4, implementation of management zone limits in Wawona would require park management to control and limit visitor use in each area in accordance with the management zone limit. This would result in a much more rigid and controlled visitor experience and could result in limiting visitor numbers in various zones within the river corridor. The annual visitor limit for the corridor would also result in lower visitor access to services compared to Alternative 1. This could result in a local, long-term, minor, adverse effect on access to visitor services in Wawona.

The VERP component of Alternative 4 would be the same as described for Alternative 2. Therefore, the overall impacts of Alternative 4 on provision of and access to visitor services would be expected to be local, long-term, minor, and adverse.

Summary of Alternative 4 Impacts. Actions taken under Alternative 4 would be expected to result in a local, long-term, minor, adverse impact on access to and the availability of visitor services due to the increased controls associated with management of visitor use by management zone.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. The cumulative projects would have a long-term, minor to moderate, adverse impact on visitor services due to the overall reduction of overnight accommodations in Yosemite Valley and potential increased restrictions on facilities and activities in wilderness areas. These adverse impacts would be partially offset by improving parking and traffic circulation in Yosemite Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Alternative 4 and the cumulative projects would result in a long-term, minor to moderate, adverse impact on visitor services because of the potential reduction of overnight accommodations in Yosemite Valley and the potential restrictions on facilities and activities in wilderness areas. This adverse impact would be partially offset by improving parking and traffic circulation within the Valley, rehabilitating and expanding some campgrounds in the park, and expanding lodging opportunities outside the park.

Wilderness Experience

Analysis

The following discussion provides an overview of the types of impacts to the wilderness experience that could occur within the Merced River corridor under Alternative 4.

Under Alternative 4, the park management program would adopt management zone limits and an annual maximum corridorwide visitor limit, as well as implementing the VERP program as described for Alternative 2. For wilderness areas, the management zone limits would be set to match the existing wilderness trailhead quota levels and would not affect the wilderness experience. Since access to wilderness areas is already limited, the annual visitor limit would not affect it. Therefore, implementation of Alternative 4 is expected to result in local, long-term, negligible, beneficial effects on the wilderness experience.

Summary of Alternative 4 Impacts. Adoption of the management zone limits and the annual visitor limit would not affect the wilderness experience. The wilderness experience under Alternative 4 would be expected to be beneficially affected by actions taken to address VERP standards in wilderness areas. Management actions that reduce access to these areas could result in adverse effects on visitor access to these areas. Overall, the impact is expected to be local, long-term, negligible, and beneficial.

Cumulative Impacts

Effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. These cumulative projects would have a long-term, minor, beneficial impact on the wilderness experience, because the wilderness ecosystem would be improved and this benefit would be only partially offset by potential long-term, adverse impacts related to possible additional restrictions on facilities and activities in wilderness areas.

Alternative 4 and the cumulative projects would result in a local, long-term, negligible to minor, beneficial impact to the wilderness experience, because the beneficial improvements to the wilderness ecosystem would offset the potential long-term, adverse impacts related to possible additional restrictions on facilities and activities in wilderness areas and the potential restrictions associated with VERP.

Social Resources

Land Use

Analysis

The following discussion provides an overview of the types of impacts to land use that could occur within each segment of the Merced River corridor under Alternative 4. The analysis for the El Portal segment also describes the types of impacts to land use that could occur based on the river corridor boundary proposed under Alternative 4. Alternative 4 would not be expected to result in any changes in land use within the park. Development in El Portal is discussed below.

Impacts to Wilderness. Alternative 4 would result in continued management of wilderness areas under the wilderness trailhead quotas. The management zone limits and annual visitor limit would not have a substantive effect on wilderness areas. The proposed VERP program would be based on and consistent with existing management zoning and existing land uses within the Wilderness segment of the corridor.

Impacts to Yosemite Valley. Implementation of management zone limits and a maximum annual visitor limit would not affect land use in Yosemite Valley. The proposed VERP program is based on and consistent with existing management zoning and existing land uses within Yosemite Valley.

Impacts to the Gorge. Implementation of management zone limits and a maximum annual visitor limit would not affect land use in the Gorge. The proposed VERP program is based on and consistent with existing management zoning and existing land uses within the Gorge.

Impacts to El Portal. The boundary for the El Portal segment of the river in this alternative was closely based upon the location of identified ORVs in El Portal. The management zoning under Alternative 4 would result in few areas being zoned for additional administrative development. It also proposes one of the lowest density zoning classifications, Open Space (2A), for much of the area south of the Merced River and east of the levee. The zoning classification for other undeveloped areas would be Discovery (2B), which allows only very limited facility development. As described in previous alternatives, additional residential and administrative development could occur within the corridor only if consistent with the stringent standards of the Wild and Scenic Rivers Act. Development outside the corridor would also need to protect any ORVs located there. The additional development of existing open spaces for residential and administrative facilities would result in some adverse effects on land use. In addition, some existing uses in El Portal would be inconsistent with the management zoning proposed under Alternative 4. Uses that would be inconsistent with the proposed zoning include the existing commercial raft launch site west of the Foresta Road bridge (Red Bud), the existing residential uses at Trailer Village/Abbieville, the use of the Murchison structures for administrative uses, and the Odger's Storage site. The zoning of these areas in a manner that is inconsistent with their current use would result in a local, long-term, minor adverse effect.

The effects on land use in El Portal from the river corridor boundary, management zone limits, the maximum annual visitor limit, and VERP would result in local, long-term, negligible adverse effects compared to Alternative 1. The reduced development in El Portal would decrease adverse effects, compared to Alternative 1.

Implementation of management zone limits and the VERP program in El Portal would be consistent with the management zoning adopted as part of this alternative.

Impacts to Wawona. Implementation of management zone limits and a maximum annual visitor limit would not affect land use in Wawona. The proposed VERP program is based on and consistent with existing management zoning and existing land uses within the Wawona.

Summary of Alternative 4 Impacts. Under Alternative 4, implementation of management zone limits, the maximum annual visitor limit, and VERP would provide park management with tools to achieve the desired conditions outlined in the management zones. Alternative 4 would be consistent with existing park zoning designations and existing land uses in most areas. In El Portal, the proposed river corridor boundary and management zoning could result in a local, long-term, negligible, adverse effect on land use as compared to Alternative 1.

Cumulative Impacts

The effects of past, present, and reasonably foreseeable future projects are described under Alternative 1. Overall, the cumulative projects would be expected to have local, long-term, minor to moderate, adverse effects on land use due to the potential for additional development of residential and administrative uses and a decrease in open space in the El Portal and Wawona areas. The impacts should be offset somewhat by the planning efforts underway on countywide planning and the El Portal Concept Plan.

The cumulative effects of Alternative 4 and the cumulative projects would be local, long-term, minor to moderate, and adverse.

Transportation

Analysis

The following discussion provides an overview of the types of impacts to transportation conditions associated with Alternative 4. Because transportation services and facilities are not provided in Yosemite wilderness areas, this analysis does not address impacts in the Wilderness segments of the river corridor.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on transportation. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to transportation associated with redirection of visitors would be short-term, and variable in location and could occur in areas within or adjacent to the park. Therefore, potential impacts to transportation are expected to be minor to moderate, and adverse.

Impacts in Yosemite Valley. Under Alternative 4, park management would manage use levels within the corridor by limiting the number of park visitors and employees allowed within each management zone at any one time. This alternative would also limit the number of visitors on an

annual basis. The management zone limits would be representative of existing levels of use in most areas. Therefore, in the short term, implementation of these limits would not be expected to affect transportation. In the long term, these limits could restrict future growth in visitor levels, which would reduce traffic congestion and result in a local, long-term, minor to moderate benefit to transportation. Since transportation effects are primarily related to peak period visitor levels and not annual levels, the maximum annual visitor limit would not affect transportation resources.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, implementation of Alternative 4 would also have local, long- term, minor to moderate benefits on congestion and parking in the Valley associated with management zone limits that restrict future growth in visitor levels and implementation of VERP. The intensity of the benefits would depend on the specific measures implemented under VERP.

Impacts in the Gorge. The management zone limits for the Gorge segment is based on estimated existing use levels. These limits are not expected to affect transportation in the short term, but could result in lower visitor numbers in the long term. This would result in local, long-term, minor benefits.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall the implementation of management zone limits with VERP for Alternative 4 would be expected to have local, long-term, minor to moderate, beneficial impacts on the transportation system in the Gorge segment. The intensity of the benefit would depend on the specific measures implemented under VERP.

Impacts in El Portal. Alternative 4 provides for a boundary that closely delineates the ORVs along the El Portal segment of the river. The proposed management zoning under Alternative 4 includes more restrictive zoning than any other alternative for much of the area south of the river and is the most restrictive of development opportunities for park administrative facilities. Since this zoning would not likely limit the potential for future administrative or visitor use development in the corridor, this alternative would have a local, long-term, negligible, beneficial effect on transportation resources in El Portal.

The management zone limits for El Portal areas would be based on the management zoning prescriptions and existing use levels for El Portal. In the short term, these limits would not be expected to result in changes in use levels. In the long term, the more restrictive management zoning under Alternative 4 would result in lower future use levels than under Alternative 1. This would result in a local, long-term, negligible to minor benefit on transportation resources.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, park management could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall the implementation of the El Portal boundary and management zoning, with management zone limits and VERP for Alternative 4 would be expected to have local, long-term, minor to moderate, beneficial impacts on the transportation system in El Portal. The intensity of the benefit would depend on the specific measures implemented under VERP.

Impacts in Wawona. The management zone limits for Wawona are based on estimated existing use levels. These limits are not expected to affect transportation in the short term, but could result in lower visitor numbers in the long term. This would result in local, long-term, minor transportation benefits.

Long-term transportation impacts would depend on the management actions implemented under the VERP process. In particular, the VERP program would include monitoring of parking demand and capacity, which correlates with traffic congestion. If the VERP monitoring process determined that indicators and standards were being violated, the park could implement a range of management actions. Depending on the actions, visitation patterns and the associated traffic volumes and transportation conditions could change. If management actions led to lower levels of visitation or parking and transportation improvements, transportation conditions could be improved.

Overall, the implementation of management zone limits with VERP under Alternative 4 would be expected to have local, long-term, minor to moderate, beneficial impacts on the transportation system in Wawona. The intensity of the benefit would depend on the specific measures implemented under VERP.

Summary of Alternative 4 Impacts. Implementation of management zone limits and management actions taken to address VERP standards would be expected to result in reduced traffic congestion at parking facilities within the river corridor. The effects of Alternative 4 are expected to be local, long term, minor to moderate, and beneficial. The duration and intensity of the benefits would depend upon the specific measures implemented.

Cumulative Impacts

The effects of the cumulative projects on transportation were addressed under Alternative 1. These effects are expected to be local, long term, minor to moderate, and beneficial. The

cumulative effect of Alternative 4 and the other projects would also be expected to be local, long term, minor to moderate, and beneficial.

Scenic Resources

Analysis

The following discussion provides an overview of the types of impacts to scenic resources that could occur within each segment of the Merced River corridor under Alternative 4.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have a beneficial effect on scenic resources. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to scenic resources associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to scenic resources is expected to be negligible to minor, and beneficial.

Impacts in Wilderness. Scenic ORVs in the Wilderness segments of the Merced River corridor include views from the Merced River and its banks of the exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.

User capacity within the Wilderness segments would be managed through the existing trailhead quota system and monitoring of wilderness resource conditions. The management zone limits for the Wilderness segments would be set at the existing trailhead quota system levels. Implementation of the VERP program would result in additional monitoring of indicators within wilderness areas (as described under Alternative 2). Since the management zone limits would be set at existing trailhead quotas, no additional management actions would be needed to implement the limits in the wilderness. Therefore, implementation of the management zone limits in the Wilderness segments would have no effect on scenic resources as compared to the No Action Alternative.

Implementation of VERP monitoring and management program for the wilderness areas would result in additional monitoring of indicators within the Wilderness segments. VERP indicators to be monitored in the Untrailed (1A) and Trailed Travel (1B) Wilderness zones include Wildlife Exposures to Human Food and the Number of Encounters With Other Parties. Additional indicators have been identified in areas zoned Heavy Use (1C) (Little Yosemite Valley) and Designated Overnight (1D) (designated overnight areas) due to the more concentrated uses in these areas. The indicators (1) number of people recreating in the River Protection Overlay and (2) people at one time at selected sites will be monitored in 1C zones. The water quality indicator will be monitored in 1D zones. (See table II-5 for the list of indicators and standards by management zones.)

Indicators have been selected to provide overall information on the health of resources within the Wilderness segments. Management actions associated with achieving standards for the (1) number of encounters with other parties and (2) wildlife exposures to human food indicators would not affect the scenic ORVs or visitors' ability to view scenic ORVs in the Wilderness segments. Therefore, implementation of the VERP program would likely have no impact on the scenic resources and the scenic ORVs.

The combination of management zone limits with VERP would be expected to have no impact on the scenic resources and the scenic ORVs within the Wilderness segments of the Merced River corridor.

Impacts in Yosemite Valley. The scenic ORVs within Yosemite Valley segment include views from the Merced River and its banks of waterfalls and water features (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, and Bridalveil Falls, and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rocks, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil) and forests.

Management zone limits for the Yosemite Valley segment would be set based on the management zoning for the area, available facilities, and existing levels of use. Park management would manage visitor use within the Valley to ensure that the limits for each management zone would not be exceeded. If visitor numbers in any zone exceeded the limits, management would take actions to reduce visitor numbers in that zone. Management actions could include educating visitors about different areas to visit, closing certain areas, removing trails or parking that facilitates access to certain areas, removing other visitor facilities that might encourage use (such as picnic tables or restrooms), or requiring permits or reservations for accessing certain areas within the Valley.

These management actions could result in a local, long-term, negligible, beneficial effect on visitors' ability to view scenic resources within Yosemite Valley because these measures would likely reduce visitation levels in the Valley in the long term, and therefore would decrease traffic and crowding compared to the No Action Alternative.

In addition to managing visitor numbers within the Valley, management actions would be implemented if VERP monitoring showed that standards were not being met. The effects of these additional management actions within the Valley would vary by the action taken. Educational measures designed to change visitor behavior in ways that reduce vegetation trampling, riverbank erosion, and water pollution would likely improve the natural setting and therefore would be expected to result in local, short- and long-term, negligible, beneficial effects on scenic resources. More restrictive measures, such as limits on activities near the river, reduced activity levels, or restrictions on automobile or bus access to the Valley would benefit the natural setting, reduce traffic congestion, and could result in short-term or long-term, beneficial impacts to visitors' ability to observe scenery. Site hardening, such as constructing boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on the natural environment but would be limited to areas designated for higher levels of development and use. New or improved site design would follow the Yosemite Valley design guidelines (NPS 2004c). Because these guidelines require consideration of significant views in all new design, site-hardening activities would likely result in local, long-term, negligible to minor, beneficial effects on scenic resources.

Overall, implementation of the proposed user capacity program with management zone limits and VERP monitoring would likely have a negligible benefit on scenic resources. This benefit would be achieved by reducing traffic congestion and crowding, conserving the natural environment within management zones, and providing better, less crowded, and less obstructed access to valued viewpoints. Where these goals would be achieved through education, site hardening, and other nonrestrictive management actions, the effect on scenic resources is expected to be long term, negligible and beneficial. Management actions that result in broad-based restrictions on

visitor transportation options, types of activities, and levels of use could have long-term, negligible to minor, beneficial impacts to scenic resources.

Impacts in the Gorge. The scenic ORVs for the Gorge segment of the river corridor include views from the Merced River and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.

Management zone limits for the Gorge segment would be based on the management zoning for this segment as well as available parking. Park management would manage the number of visitors in the Gorge segment to ensure that the management zone limits are not exceeded. If visitor numbers exceeded the limits, management would take actions to reduce use levels by (e.g., by reducing parking). Management actions could also include instituting a day-use reservation program for entry into the park or closing entrance stations when the limit is reached. These measures would control the number of visitors able to access the Gorge segment.

The results of these management actions would depend on the action. Since existing use levels of the Gorge segment are relatively low, management actions that reduce access would likely result in local, long-term, negligible, beneficial effects on scenic resources due to the removal of vehicles in foreground views.

Implementation of the management zone limits in the Gorge segment is expected to result in negligible effects in the short term because existing use in this segment is relatively low and the limit would be set close to existing use levels. In the long term, the level of use under Alternative 4 would likely be lower than under the No Action Alternative. Since current use levels are low and there are few crowding problems, a reduction in use would provide local, long-term, negligible benefits to scenic resources in the Gorge segment.

Additional management actions would be implemented if VERP monitoring showed that standards were not being met. The effects of these management actions within the Gorge segment would vary by the action. Educational measures are expected to result in local, short- and long-term, negligible effects. More restrictive measures, such as limiting vehicle access and parking, limiting activities near the river, or reducing visitor levels would be expected to provide for a less crowded and more natural environment.

The effects of the measures would depend on the duration of the restrictions, as well as on whether the restrictions were selective in terms of areas and activities or were more broad-based, such as an overall reduction in visitors allowed through the park entrance stations. Short-term, selective restrictions would be expected to result in local, short-term, negligible, beneficial effects on visitors' ability to experience scenic resources. Site hardening, such as construction of boardwalks, picnic facilities, or roadway improvements, could result in adverse effects on the natural environment but would be limited to areas designated for higher levels of development and use in areas zoned Attraction (2D) and Park Operations and Administration (3C) zones. New or improved site design would follow the Yosemite Valley Design Guidelines. Because these guidelines require consideration of significant views in all new design, site-hardening activities would be expected to result in local, long-term, negligible, beneficial effects to scenic resources in these areas.

Overall, the implementation of management zone limits with VERP monitoring within the Gorge segment is expected to have local, long-term, negligible, beneficial impacts on scenic resources

related to reduced traffic and crowding and reduced impacts to the natural environment. Management actions that achieve these goals through education and site hardening would have long-term, negligible, beneficial effects on scenic resources. More restrictive management actions could have local, short- or long-term, negligible to minor, beneficial effects on scenic resources.

Impacts in El Portal. Scenic resources in the El Portal segment of the river corridor consist of views of the geologic transition between granite and metasedimentary bedrock along the canyon walls and distinct views of Chinquapin Fall.

The boundary for the El Portal segment of the river in Alternative 4 would be based on the locations of specific ORVs. Primarily low-density zoning (2A and 2B) would be applied, except in limited existing developed areas (3C). The Trailer Village/Abbieville area would be zoned for Day Use, which would allow for future development of visitor facilities (e.g., parking, restrooms, picnic areas). Compared to Alternative 1, Alternative 4 would result in less additional development or redevelopment within most areas of the El Portal segment and thus less potential for changes in scenic resources. Due to the small number of visitors and the existing development in the area, the overall effect of Alternative 4 on scenic resources in El Portal is expected to be local, long-term, negligible, and beneficial compared to the No Action Alternative.

Implementation of management zone limits for the El Portal segment would be expected to have a negligible effect on scenic resources in the short term due to the low level of visitor use. In the long term, enforcement of management zone limits for this segment could limit future development of visitor facilities, require removal of existing informal parking areas, or require additional restrictions on visitor activities such as rafting, kayaking, or fishing. Implementation of these types of measures is expected to have local, long-term, negligible, beneficial effects on scenic resources.

Implementation of VERP within the El Portal segment would include monitoring of the indicators identified for the areas zoned 2A, 2B, and 3C. The effects of management actions would vary by the action. Educational measures to change visitor and employee behavior related to activities that could adversely affect vegetation and water quality would be expected to result in local, long-term, negligible, beneficial effects on scenic resources by improving the natural setting. More restrictive measures, such as limiting activities near the river or reducing activity levels, are expected to result in a negligible, beneficial effect to scenic resources, but the duration and the intensity of the effect would depend on whether the restrictions were short or long term and selective or broad-based. Site hardening, such as the construction of parking or picnic facilities, would generally occur only in existing developed areas such as the Trailer Village, Old El Portal, Rancheria Flat, and Railroad Flat. Therefore, these management actions would have no effect on scenic resources.

Impacts in Wawona. The scenic ORVs for the Wawona segments of the river corridor include views from the Merced River and its banks of large pothole pools within slickrock cascades, old growth forest, and meadows, Wawona Dome, and continual whitewater cascades in the deep and narrow river canyon below Wawona.

Implementation of management zone limits for Wawona would require park management to enforce limits on the number of visitors in each zone. Management actions to address VERP indicators and standards in Wawona would be similar to those described above. Since most areas in the Wawona segments are zoned for low-intensity visitor use, management actions taken in

response to VERP monitoring would likely focus on more restrictive measures. Visitor education efforts in response to monitoring of natural resource and social conditions would be expected to result in local, long-term, negligible benefits to scenic resources by improving the natural environment. More restrictive measures, such as restrictions on activities or use levels in various areas, are expected to result in negligible, beneficial effects on scenic resources.

In the river corridor below Wawona, which is zoned for Undeveloped Open Space (2A+), management actions in response to VERP monitoring would likely focus on education and more restrictive measures to reduce use levels and restore natural resources. Site hardening would not be appropriate in this area. Measures to reduce the number of people and impacts to natural resources would be expected to have long-term, negligible, beneficial effects on scenic resources. More restrictive measures, such as enforced limits on the number of people accessing the area, would benefit the scenic ORVs by creating an improved natural environment.

Summary of Alternative 4 Impacts. Compliance with existing park polices, including the Yosemite Valley design guidelines, would help ensure that the scenic ORVs in the Wilderness, Yosemite Valley, Gorge, and Wawona segments are protected and enhanced. Implementation of management zone limits and VERP monitoring would potentially result in restrictions on visitor use throughout the Merced River corridor. These restrictions would likely improve the natural environment and result in a local, long-term, negligible, beneficial impact on scenic resources. Under Alternative 4, implementation of management zone limits along with the VERP program would result in long-term, negligible, beneficial impacts on scenic resources.

Cumulative Impacts

Cumulative impacts from past, present, and reasonably foreseeable future actions in conjunction with Alternative 4 would be the same as described for Alternative 1.

Overall, these cumulative actions, in combination with Alternative 4, could have a net long-term, minor, adverse impact on scenic resources and the scenic ORVs within the Merced River corridor.

Impairment

Alternative 4 is expected to result in long-term, minor, beneficial impacts on scenic resources and therefore would not be expected to impair the scenic ORVs for future generations.

Socioeconomics

Social Environment

Analysis

Under Alternative 4, the National Park Service would supplement existing user capacity program elements with management zone limits and a VERP program. (The maximum annual visitor limit would not affect the social environments.) Social environments within the river corridor could be affected by changes in employee housing in the developed areas and by changes in commute times to park duty stations. Under Alternative 4, the river corridor boundary for the El Portal segment would closely follow the location of ORVs within the El Portal Administrative Site.

Impacts in Wilderness. There are limited facilities in wilderness areas, and few employees are stationed in these areas. Under Alternative 4, wilderness management would continue in its present form and there would be no change to employee levels in wilderness areas. As described

under Alternative 2, implementation of management actions under VERP could result in some increase or decrease in wilderness activities, but overall there would likely be a local, long-term, negligible, adverse impact on the social environment in wilderness areas.

Impacts in Yosemite Valley. Implementation of management zone limits for Yosemite Valley would require management actions designed to control visitor levels within each specific zone. Management focus would be on visitors in most zones, but the number of employees and residents would also be managed, particularly in park operations and administrative zones. Management zone limits in park operations and administrative zones have been set close to existing use levels and would allow for current levels of employee housing, but would constrain future growth in administrative uses within management zones in the Valley. This would be expected to result in a local, long-term, negligible, adverse effect on the social environment in the Valley, compared to Alternative 1.

Implementation of a VERP program in Yosemite Valley under Alternative 4 would have the same effects described under Alternative 2. The effects of potential management actions in the Valley would vary by the action taken. Actions designed to reduce employee housing in the Valley could result in a local, long-term, minor to moderate, benefit to the social environment in the Valley by reducing crowding. Employees relocated would face increased commute times for Valley employees relocated outside the Valley, resulting in a local, long-term, minor to moderate, adverse effect. Restrictions on the use of areas or on activities in various areas could reduce recreation opportunities for Valley residents. However, because Valley residents have access to a broad range of recreation activities, these restrictions would likely result in a local, long-term, negligible to minor, adverse effect on recreation opportunities.

Overall, implementation of Alternative 4 could result in local, long-term, minor to moderate benefits on the social environment from reduced crowding. However, employees relocated from the Valley would be adversely affected due to increased commutes.

Impacts in El Portal. Implementation of management zone limits within El Portal would allow for an increase in employee housing in El Portal, consistent with the *General Management Plan*. This increase could result in a local, long-term, minor to moderate, adverse effect on the social environment and community amenities due to increased population pressures.

VERP management actions could result in restrictions on certain activities within the river corridor in El Portal. As described under Alternative 2, implementation of restrictive management actions in response to VERP monitoring would likely result in local, long-term, negligible to minor, adverse effects on recreation opportunities and employee commuting options.

The river boundary for the El Portal segment of the river in this alternative was closely based on the location of identified ORVs within the El Portal Administrative Site. Alternative 4 would result in fewer areas being zoned for additional administrative development (3C) and proposes one of the lowest density zoning classifications, Open Space (2A), for much of the undeveloped area south of the Merced River and east of the levee. The zoning classification for other nondeveloped areas would be Discovery (2B), which allows only very limited facility development. Since Alternative 4 proposes much more restrictive management zoning for the areas included within the corridor, it would likely result in less development in El Portal compared to Alternative 1. Since this alternative would likely result in less development, the potential for adverse effects on

community amenities would be reduced compared to Alternative 1, resulting in a local, long-term, minor to moderate, beneficial effect.

Impacts in Wawona. Implementation of management zone limits within Wawona would allow for an increase in employee housing in El Portal, consistent with the *General Management Plan*. This increase could result in a local, long-term, minor to moderate, adverse effect on the social environment and community amenities due to increased population pressures.

VERP management actions could result in restrictions on certain activities within the river corridor in Wawona. As described under Alternative 2, implementation of restrictive management actions in response to VERP monitoring would likely result in local, long-term, negligible to minor, adverse impacts on recreation opportunities and employee commuting options.

Summary of Alternative 4 Impacts. Under Alternative 4, park management would implement management zone limits set near existing use levels, but allowing for some increase in employee housing in El Portal and Wawona, consistent with the *General Management Plan*. Reallocation of employee housing from Yosemite Valley to El Portal and Wawona could result in local, long-term, minor to moderate benefits on the social environment in Yosemite Valley but local, long-term, minor to moderate, adverse effects on the social environments in El Portal and Wawona. The proposed El Portal boundary and management zoning under Alternative 4 would offset this adverse effect somewhat as compared to Alternative 1. Implementation of VERP monitoring could result in local, long-term, minor to moderate, adverse effects on the social environment through population changes and increased commutes for relocated employees. The intensity of the effects would depend on the amount of housing relocated and where replacement housing is sited. Effects on recreation opportunities within the corridor communities would be negligible to minor.

Cumulative Impacts

The effects of the cumulative projects on the social environment are discussed under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse effect on the social environments within the corridor due to increased housing in El Portal and Wawona and increased commute times to Yosemite Valley. The impact intensity of any planning projects would depend on the extent to which the plan's recommendations are implemented.

Alternative 4 and the cumulative projects would have a local, long-term, minor to moderate, adverse cumulative effect on the social environments within the corridor due to decreases in housing and social amenities near housing and increases in commuting time in Yosemite Valley, and increases in housing in El Portal and Wawona. The impact intensity would depend on the extent to which the cumulative projects' recommendations are implemented. The adverse effects in El Portal would be reduced, as compared to Alternative 1, due to the more restrictive management zoning proposed under Alternative 4.

Visitor Populations

Analysis

Alternative 4 would implement management zone limits, a maximum annual visitor limit, and a VERP program in addition to other existing park policies regarding user capacity within the river corridor.

Proposed management zone limits are set near existing visitor levels for each management zone within the park. Therefore, visitor population impacts are not expected in the short term. In the long term, visitor population levels could be constrained by the established management zone limits or the maximum annual visitor limit, as compared to visitor population levels under Alternative 1. The effect of management zone limits on visitor populations is expected to be local, long-term, minor to major, and adverse due to the likely lower numbers of visitors as compared to Alternative 1.

Implementation of VERP under Alternative 4 would have the same effects described under Alternative 2. The effects on visitor populations from management actions taken under VERP would be negligible for less restrictive measures, such as visitor education or limitations on activities in specific areas. The potential effects on visitor populations from temporary restrictions during peak periods would be local, short term, minor to moderate, and adverse. Permanent limits or restrictions are likely to result in local, long-term, moderate to major, adverse effects on visitor populations compared to Alternative 1.

Summary of Alternative 4 Impacts. Alternative 4 could result in local, long-term, minor to major, adverse effects resulting from restrictions on visitor populations related to management zone limits, maximum annual corridorwide visitation limits, and implementation of VERP.

Cumulative Impacts

The effects of the cumulative projects on visitor populations are discussed under Alternative 1.

The cumulative projects would have a regional, long-term, negligible to minor, adverse impact on visitor populations due to the overall reduction in overnight accommodations in Yosemite Valley. This adverse effect would be offset somewhat by additional overnight accommodations being constructed outside the park.

Alternative 4 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a regional, long-term, minor to major, adverse impact on visitor populations due to a possible overall reduction in the number of lodging and camping units in the park and potential limits on visitor numbers to comply with management zone limits and the annual visitor limit.

Regional Economy

Analysis

Implementation of management zone limits and an annual maximum visitor limit could result in lower visitor levels in the park in the long term compared to Alternative 1. These lower visitation levels would likely result in lower visitor spending in communities in the region. Therefore, management zone limits could result in regional, long-term, minor, adverse effects on the regional economy.

VERP management actions that affect visitor populations, such as restrictions on specific activities, on the use of specific areas, or on the levels of day use within the river corridor, would have the most effect on the regional population. The effect on the regional economy would differ depending on the management actions taken. Temporary visitor restrictions or restrictions on specific activities within the corridor would likely result in local, short-term, negligible to minor beneficial effects if visitors temporarily displaced from the park spend more time in regional communities. Longer term restrictions on levels of visitor use would likely result in long-term, regional, minor, adverse effects if visitor restrictions were placed on day-use levels and, therefore, fewer visitors attempted to reach the park. The intensity of the effects would depend on the duration and extent of any potential restrictions or use level reductions. Other management actions that might be taken to address VERP standards include the expansion of visitor facilities or site hardening in areas zoned for intensive visitor use. These actions could result in regional, long-term, negligible, beneficial effects on the regional economy through increased construction spending and employment.

Summary of Alternative 4 Impacts. Implementation of management zone and annual visitor limits under Alternative 4 would likely result in regional, long-term, minor, adverse effects on the regional economy. Management actions implemented under VERP could have regional, long-term, negligible to minor benefits to regional, long-term, minor, adverse effects, depending on the measure implemented. The effect on the regional economy would likely be long-term, minor, and adverse compared to Alternative 1.

Cumulative Impacts

The effects of the cumulative projects on the regional economy are described under Alternative 1.

The cumulative projects would have a short-term, minor, beneficial effect on the regional economy, primarily due to construction spending and employment. The cumulative projects would have a long-term, negligible to minor, beneficial effect on the regional economy due to increased regional output and employment from increased overnight accommodations in the park and in local communities.

Alternative 4 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor, adverse impact on the regional economy due to the potential for long-term reductions in visitor populations compared to Alternative 1, which would reduce visitor spending in the region. This impact in the regional economy would be long-term, minor, and adverse. These effects would be offset to some degree by an increase in construction employment and spending, which would have a short-term, negligible to minor, beneficial, effect on the regional economy.

Concessioner

Analysis

Implementation of management zone limits and an annual visitor limit under Alternative 4 would likely result in lower visitor levels in the park in the future compared to Alternative 1. Current visitor levels are not expected to decrease as a result of the management zone limits, but future growth in visitor levels would be constrained. As concessioner operations are directly related to visitor numbers in the park, impacts on the concessioner from the management zone limits are expected to be local, long term, minor to moderate, and adverse.

Implementation of VERP under Alternative 4 would have the same effects on the concessioner as described under Alternative 2. Measures taken to address VERP standards could include restrictions on specific activities (rafting, horseback riding, etc.), on the use of specific areas, or on the levels of day use within the river corridor. These restrictions could result in local, long-term, adverse effects on concessioner operations. Other management actions that might be taken to address VERP standards include the expansion of visitor facilities in areas zoned for intensive visitor use. These actions could result in local, long-term, beneficial effects on the concessioner.

Summary of Alternative 4 Impacts. Under Alternative 4, management zone and annual visitor limits could result in lower visitor levels in the long term, compared to Alternative 1. Management actions taken to address VERP standards could result in restrictions on specific activities or more general restrictions on visitor levels, resulting in local, long-term, adverse effects on concessioner operations. The intensity of the effect would vary depending on the extent of the restrictions imposed. Management actions that increase visitor services could result in local, long-term, beneficial effects on concessioner operations.

Cumulative Impacts

The effects on concessioner operations from past, present and reasonably foreseeable future actions were described under Alternative 1.

The cumulative projects would have a local, long-term, minor to moderate, adverse impact on the primary park concessioner associated with locating new employee housing outside of the Valley and potential additional restrictions on activities and facilities in wilderness areas.. The adverse effect would be partially offset by increased accommodations being developed in Curry Village and at Yosemite Lodge. The impact intensity of any planning projects would depend on the extent to which the *Yosemite Valley Plan's* recommendations are implemented.

Alternative 4 and the cumulative projects within and in the vicinity of Yosemite National Park would result in a long-term, minor to moderate, adverse impact on the concessioner associated with lower visitor numbers under the visitor limits, the location of new employee housing outside of the Valley, and potential additional restrictions on activities and facilities in wilderness areas., These adverse effects might be offset somewhat by actions that increase visitor services within some areas of the Valley.

Park Operations and Facilities

The National Park Service is committed to the implementation of a User Capacity Management Program to protect and enhance the Merced River corridor's Outstandingly Remarkable Values. The park initiated monitoring associated with the VERP component of this program in 2004, a copy of the 2004 Annual Report is available on the park's website (www.nps.gov/yose/planning/ucmp.htm) and has secured funding for the continuation of this program through fiscal year 2008. In addition, the park has established a VERP Coordinator position and has retained a team of technical experts to assist with the development, refinement, and implementation of this program. The National Park Service is committed to implementation of this program beyond 2008 to fully comply with Wild and Scenic River's Act requirements and to achieve the goals and objectives of protecting and enhancing the Merced River corridor's Outstandingly Remarkable Values.

Analysis

The following discussion provides an overview of the types of impacts to park operations, infrastructure, facilities, and energy consumption that could occur within of the Merced River corridor under Alternative 4. Effects on park operations from the revised corridor boundaries and zoning in El Portal are also addressed for the El Portal segment.

Management actions associated with the redirection of visitors from areas within the Merced River corridor to areas outside of the Merced River corridor could have an adverse effect on park operations. However, redirection of visitors is expected to only occur at site-specific locations or during peak visitation periods on summer and holiday weekends. Impacts to park operations associated with redirection of visitors would be short-term, and variable in location. Therefore, potential impacts to park operations are expected to be moderate, and adverse. Redirection of visitors could involve park staff from the Visitor and Resource Protection, Facility Maintenance, Business and Revenue Management and Interpretation and Orientation divisions during traffic management activities and get coordination with local communities and media outlets.

Park Operations

Impacts in Wilderness. Implementation of management zone user capacity limits with VERP in the Wilderness segments under Alternative 4 would include the monitoring of indicators in various management zones (see table II-5). The indicators would be monitored as an additional element of ongoing ranger patrols and other existing park operations activities in the Wilderness segments such as WIMS. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Wilderness segments.

The additional VERP monitoring, reporting of results to the public, and potential management actions in the Wilderness segments of the river corridor would likely increase park staff workloads. However, given the seasonal nature of visitation to wilderness areas and the limited number of visitors as a result of the existing trailhead quota system, this increase would likely result in a long-term, minor, adverse impact to park operations.

Although the limits for each management zone in the Wilderness segments would continue to be managed through the trailhead quota system, it is not expected that additional park staff or new facilities would be necessary in these segments under Alternative 4.

Impacts in Yosemite Valley. Implementation of management zone user capacity limits with VERP in Yosemite Valley under Alternative 4 would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in Wilderness segments.

The additional VERP monitoring, reporting of results to the public, and potential management actions, combined with implementing and managing a limit for individual management zones in the Valley, would increase park staff workloads. It is expected that this increase in workloads would result in an overall long-term, major, adverse impact to park operations, mostly during the summer months when visitation is highest.

Implementing a limit within each management zone in addition to VERP monitoring would require park management to monitor the number of visitors and/or vehicles entering and exiting

each management zone in the Valley. If the limits were exceeded, management actions limiting access could be required. Implementing management zone limits under Alternative 4 would likely consist primarily of enforcing facility and parking capacities during peak use (summer and some weekend holidays) and would require additional park staff and facilities to conduct monitoring and implement appropriate management actions.

Impacts in the Gorge. Implementation of management zone user capacity limits with VERP in the Gorge under Alternative 4 would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Gorge segment.

The Gorge segment has limited visitor and other park facilities. The additional VERP monitoring, reporting of results to the public, and potential management actions combined with management zone user capacity limits in the Gorge segment would likely increase park staff workloads. The management zone limits in this segment would require additional efforts by park staff to implement management actions if the limit was exceeded. However, because there is limited visitor use in the Gorge during most of the year, any additional effort would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in park staff workloads is expected to result in an overall long-term, minor to moderate, adverse impact to park operations.

Impacts in El Portal. Implementation of management zone user capacity limits with VERP in the El Portal segment would include the monitoring of indicators in the various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the El Portal segment.

The additional VERP monitoring, reporting of results to the public, and potential management actions, combined with management zone user capacity limits in the El Portal segment, would likely increase park staff workloads, resulting in an overall long-term, negligible to minor, adverse impact to park operations.

Approximately 132 acres would be zoned as Park Operations and Administration (3C) under Alternative 4 in El Portal. The remaining acreage in this segment would be zoned Discovery (2B) (277 acres) and Open Space (2A) (404 acres). Alternative 4 represents the most restrictive zoning and corridor configurations of all the alternatives. The National Park Service would be required to protect and enhance ORVs located in this segment in accordance with Wild and Scenic Rivers Act. However, the area zoned 3C under Alternative 4 would allow very little flexibility within the river corridor for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries. Therefore, the river corridor boundary and zoning under Alternative 4 would likely result in an overall long-term, moderate, adverse impact to park operations.

The management zone user capacity limits in the El Portal segment would require additional efforts by park staff to implement management actions if the limits were exceeded. Any additional efforts would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in park staff workloads would likely result in an overall long-term, minor to moderate, adverse impact to park operations.

Impacts in Wawona. Implementation of management zone limits with VERP in the Wawona segments under park jurisdiction would include the monitoring of indicators in various management zones. If VERP monitoring results indicated that the established standards for these indicators were being exceeded, management actions would be implemented to maintain desired conditions in the Wawona segments.

The additional VERP monitoring, reporting of results to the public, and potential management actions, combined with management zone user capacity limits, would likely increase park staff workloads, resulting in an overall long-term, moderate to major, adverse impact to park operations.

The management zone user capacity limits in the Wawona segments would require additional efforts by park staff to implement management actions if the limits were exceeded. Any additional effort would typically occur during periods of high use (summer and some holiday weekends). Therefore, this increase in park staff workloads would likely result in an overall long-term, moderate to major, adverse impact to park operations.

Park Infrastructure and Facilities

Impacts in Wilderness and the Gorge. Implementation of management zone user capacity limits with VERP is not expected to require changes to, or the need for, any new park infrastructure and facilities. Therefore, Alternative 4 would not affect park infrastructure and facilities.

Impacts in Yosemite Valley and Wawona. Implementation of management zone user capacity limits with VERP could require that traffic checkpoints and/or additional traffic monitoring equipment be put in place, particularly during periods of high use (summer and some holiday weekends). These actions would likely result in a long-term, moderate, adverse impact to park infrastructure and facilities, depending on the type and nature of the additional facilities.

Impacts in El Portal. With the river boundary and management zoning in El Portal under Alternative 4, approximately 132 acres would be zoned as Park Operations and Administration (3C). The remaining acreage in this segment would be zoned Discovery (2B) (277 acres) and Open Space (2A) (404 acres). Alternative 4 represents the most restrictive zoning and corridor configurations of all the alternatives. The National Park Service would be required to protect and enhance ORVs located in the El Portal segment in accordance with the Wild and Scenic Rivers Act. However, the area zoned 3C under Alternative 4 would allow very little flexibility for park management to relocate utilities, facilities, and services to El Portal that are currently within park boundaries. The removal of some park infrastructure and facilities in Yosemite Valley, the design and construction of new facilities in the El Portal Administrative Site, and the removal of decommissioned facilities would result in a short-term, minor, impact to park infrastructure and facilities. Therefore, the river corridor boundary and zoning under Alternative 4 would likely result in an overall long-term, minor to moderate, adverse impact to park infrastructure and facilities.

The management zone user capacity limits in the El Portal segment would require additional efforts by park staff to implement management actions if the limits were exceeded. Any additional effort would typically occur during periods of high use (summer and some holiday weekends). However, it is expected that an increase in monitoring would result in a long-term, minor to moderate, adverse impact to park facilities and infrastructure.

Energy Consumption

Impacts in Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona. Implementation of a user capacity program with VERP and management zone limits is not expected to substantially increase or decrease the amount or types of energy consumed in the river corridor segments compared to Alternative 1. However, the addition of employee housing on a corridorwide basis in the El Portal, Yosemite Valley, and Wawona segments would require an increase in overall energy consumption, resulting in a long-term, minor, adverse impact compared to Alternative 1. Alternative 4 is expected to result in an overall long-term, minor, beneficial impact with respect to vehicle energy consumption, primarily due to improved fuel economy and the increased use of alternative fuels.

Summary of Alternative 4 Impacts. Implementation of management zone user capacity limits with VERP in the Wilderness, Yosemite Valley, Gorge, El Portal, and Wawona segments of the river corridor would require changes to and increase the need for new park infrastructure and facilities. Therefore, Alternative 4 would likely result in long-term, minor to major, adverse impacts to park operations and park infrastructure and facilities.

In El Portal, the river corridor boundary and zoning under Alternative 4 would result in an overall long-term, moderate, adverse impact to park operations and an overall long-term, minor to moderate, adverse impact to park infrastructure and facilities.

Implementation of management zone user capacity limits with VERP is not expected to increase the amount or types of energy consumed in the river segments compared to Alternative 1. This alternative would result in an overall long-term, minor, beneficial impact with respect to vehicle fuel consumption, primarily due to improved fuel economy and the increased use of alternative fuels.

Cumulative Impacts

The cumulative effects to park operations from past, present, and foreseeable future actions would be the same as those described for Alternative 1. Overall, these cumulative actions, in combination with Alternative 4 could have a net long-term, minor, beneficial effect on park operations in the Merced River corridor.

Impairment

The National Park Service has a management responsibility to conserve the scenery, natural and historic objects, and wildlife resources of the park. Park operations are not subject to the impairment standard.

Unavoidable Adverse Impacts

The following discussion identifies unavoidable adverse impacts to resources associated with implementation of Alternative 4, which consists of the establishment of management zone limits based upon proposed management zone capacity factors. For the purposes of this document, these impacts have been identified as being unavoidable, moderate to major, and adverse.

No impacts associated with the implementation of Alternative 4 have been identified as being unavoidable, moderate to major, and adverse to natural and cultural resources. However, unavoidable adverse impacts to the visitor experience and to park operations could occur if more restrictive management actions were taken to ensure that the ORVs are protected and enhanced.

Unavoidable adverse impacts could result if visitors were limited in their ability to freely move about within individual management zones, or restricted from entering the a specific management zone. In addition, unavoidable adverse impacts could occur to park operations as a result of the need for additional staff and resources necessary to adequately enforce more restrictive management actions.

Irreversible and Irretrievable Commitments of Resources

This section identifies any resources that would be lost either temporarily or permanently as a result of Alternative 4. Alternative 4 consists of the establishment of management zone limits based upon proposed management zone capacity factors.

Relocating existing facilities and/or the development of new facilities in El Portal would result in the expenditure of energy to relocate or develop the facility. In addition, relocating existing facilities and/or construction of new facilities would involve an irreversible commitment of construction-related materials, such as concrete, asphalt, wood, and metal.

Similar to Alternatives 1, 2 and 3, energy consumption in the park will continue into the future resulting in an irreversible and irretrievable commitment of energy sources. However, overall energy consumption is expected to decrease with time as the park converts to more efficient types of equipment, and fleet vehicle turnover occurs resulting in the use of more technically advanced and energy-efficient vehicles.

Relationship of Short-Term Uses of the Environment and Long-Term Productivity

The river corridor and management zoning associated with Alternative 4 for El Portal would allow for development of park administrative facilities within 132 acres of the 814 acres within the corridor (primarily north of the river). Potential development would occur in a manner which protects the ORVs within this management zone; however, these actions could temporarily adversely effect resources during construction. Once completed, the relocated and/or newly constructed facilities would have a long-term benefit to park operations.

Responsiveness of Alternative 4 to the Ninth Circuit Court of Appeals' Direction on the Merced River Plan

The Ninth Circuit Court of Appeals directed the National Park Service to revise the Merced River Plan to address user capacity and to draw the boundaries in the El Portal segment in a manner that protects its ORVs. In addition, the District Court for the Eastern District of California directed the National Park Service to address how the Merced River Plan would amend the 1980 *General Management Plan*.

User Capacity

In addressing user capacity, the Ninth Circuit Court of Appeals specifically directed the National Park Service to "adopt specific limits on user capacity" and that "such limits describe an actual level of visitor use that will not adversely impact the Merced's ORVs."

Alternative 4 includes each of the specific, measurable limits on types and levels of use that are included within Alternative 1, as well as a maximum visitor limit by management zone and a

maximum annual visitation limit for the river segment, in addition to implementation of the VERP program. Management of Wilderness segments would continue under the existing trailhead quota system (1,280 overnight visitors in Yosemite wilderness areas) and WIMS, with the addition of the VERP program.

The maximum visitor limit by management zone under Alternative 4 would limit the number of visitor in each management zone at one time. The proposed management zone limits would be based on capacity levels that approximate existing use levels. Because real-time monitoring and control of visitors by management zone would require construction of fences or control points throughout the river corridor, implementation of Alternative 4 would be based on periodic sampling of visitor numbers in the various management zones. These sampling periods would be concentrated during peak periods. Park management would take actions to limit use levels in the management zones if the proposed limits were exceeded.

In addition to the maximum visitor limits by management zone, the National Park Service would implement a maximum annual visitor limit of 3.27 million for the river corridor. This annual limit would be set at a level that ensures that the maximum management zone limit levels would not be met on most days of the year.

Under Alternative 4, the National Park Service would also implement a VERP program. Under the VERP program, the National Park Service has adopted a host of indicators (measured variables) and standards (measured values) that reflect the qualitative conditions for the management zones in quantitative form. The standards have been set at levels designed to protect and enhance ORVs (see table II-5). The standards are scientifically measurable limits, and the standards will be measured through a monitoring program designed for each specific indicator. The standards provide clear, documented triggers for management action. If a standard is being met, management action is not required. If conditions are declining (but have not yet fallen below a set standard), management action may be taken to improve the condition and forestall continued decline. If monitoring indicates that conditions do not meet established standards, management action must be taken. Table II-3 presents a list of the types of management actions that can be taken to address conditions documented through the VERP program. VERP data would be used to ensure that the adopted limits are adequate to protect and enhance the ORVs. If adopted standards are not being met, visitor levels could be restricted beyond the adopted management zone limits described above.

Alternative 4 provides specific measurable limits on daily and annual visitor numbers and on employees within the corridor. In addition, the VERP program included in Alternative 4, along with the existing user capacity measures from the No Action Alternative, will provide an adequate array of specific, measurable limits on types and levels of use to ensure that the river's ORVs are being protected and enhanced. As a result, this alternative complies with the Court direction requiring specific, measurable limits on user capacity.

El Portal Boundary

The Court directed that the National Park Service "redetermine the river area boundaries at El Portal" and that these boundaries "must be drawn so as to protect and enhance the ORVs causing that area to be included within the Wild and Scenic River System." In response to this direction from the court, the National Park Service gathered data on ORVs in El Portal, and used this data to inform the width of the boundaries and the zoning applied within those boundaries.

In El Portal, Alternative 4 proposes a river corridor boundary that closely follows the locations of the ORVs for the El Portal segment. The proposed zoning under this alternative would allow development of park administrative facilities in limited existing developed areas, if development can be completed in a manner which protects the ORVs. Undeveloped areas south of the river are zoned 2A (Open Space) and 2B (Discovery) which would not allow for development of park administrative facilities or most visitor facilities.

The additional data gathered on the location of ORVs together with the more restrictive zoning across a larger portion of the El Portal Administrative Site provide for the protection of ORVs. Further, all facility development proposed within the El Portal Administrative Site would undergo environmental compliance review, which would require the proposed development to be consistent with all of the elements of the Merced River Plan, including the protection and enhancement of ORVs.

The proposed boundary under Alternative 4 meets the Court direction to redraw the boundary so as to protect the ORVs for this segment of the river.

Amendments to the 1980 *General Management Plan*

The Wild and Scenic Rivers Act requires the managing agencies to prepare comprehensive management plans for the river and its immediate environment. The Merced River Plan, as revised by this document, provides direction on these issues for the 81 miles of the Merced Wild and Scenic River under the jurisdiction of the National Park Service.

Congress further authorized the National Park Service to prepare its management plan for the river by making appropriate revisions to the park's 1980 *General Management Plan* (16 USC 1274[a][62]). The Wild and Scenic Rivers Act generally provides that river management plans "shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands" (16 USC 1274).

While it is not the policy of the National Park Service retroactively to revise existing plans, Section 1274(a)(62) of the Wild and Scenic Rivers Act requires that the *General Management Plan* be revised to meet the requirements of section 1274(b). Accordingly, the Merced River Plan adopted in November 2000 resulted in the following amendments to the *General Management Plan*. The Merced River Plan's management zoning, River Protection Overlay, river corridor boundaries (with the exception of the El Portal segment) and classifications, and the ORVs revise the *General Management Plan* by establishing more detailed land-use prescriptions that must be applied in future site-specific planning. The Merced River Plan's Section 7 determination process is a tool that augments the goals of the *General Management Plan*. If selected, this alternative further revises the *General Management Plan* by adopting new boundaries and zoning for the El Portal areas and by adopting a VERP program. No development or use of park lands in the areas within the river corridor shall be undertaken that is inconsistent with the Wild and Scenic Rivers Act designation of the Merced River, or that is inconsistent with the Merced River Plan, as revised by the Revised Merced River Plan/SEIS.

General Management Plan Goals

The *General Management Plan* establishes five broad goals for managing Yosemite National Park (NPS 1980a, pp. 1-4). Although the *General Management Plan* is over 20 years old, its goals are still valid today and apply to the management of the Merced River corridor under the Merced River

Plan. The Merced River Plan and this revision work in concert with the goals set forth in the *General Management Plan*, and outline an additional set of specific goals for management of the Merced Wild and Scenic River (MRP pp. 23-24). The Merced River Plan's five goals were developed to further the policy established by the Wild and Scenic Rivers Act, namely to preserve designated rivers in their free-flowing condition, and protect and enhance the river's ORVs. The five defining goals of the *General Management Plan* and the five goals of the Merced River Plan are intertwined, and no one goal can be emphasized to the complete exclusion of the others.

General Management Plan Management Objectives

The *General Management Plan* sets forth a number of Management Objectives that guide resource management, visitor use, and park operations (NPS 1980a, pp. 5-10). The elements of the Merced River Plan, including the revisions made by this alternative, provide an added level of detailed guidance to park managers on how to achieve management objectives for the park. Those elements are boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and VERP. For example, projects within the river corridor must protect and enhance ORVs and be consistent with the other elements of the Merced River Plan. Projects adjacent to the river corridor must protect ORVs, and depending on location, may need to undergo a Section 7 review if they affect the bed or banks of the river.

General Management Plan Land Management Zoning

The *General Management Plan* (GMP pp. 10-13) specifies several land management zones, including a Development Zone. The management zones described in the Merced River Plan and the management zones proposed for the El Portal segment for Alternative 4 as illustrated in figure III-4 replace the Management Zoning Plan of the *General Management Plan* for those areas within the Merced Wild and Scenic River corridor boundaries. Zoning of areas outside the river corridor boundary remains unchanged; however, development and uses in areas adjacent to the river corridor must be protective of ORVs, as provided for in the Merced River Plan.

General Management Plan Visitor Use

Adoption of the management zone limits and the annual corridorwide visitation limit would not amend the long-term visitor capacity goals adopted in the *General Management Plan*. Management zone limits would continue to provide the park with a management strategy to regulate the dispersion of use across management zones, once the visitor capacity goals of the *General Management Plan* have been reached. Park managers would continue to use the visitor capacity goals from the *General Management Plan* for all facility planning purposes and would continue to manage with the intent of reaching those goals.

In addition, the VERP program has the ability to reduce visitation levels below the proposed management zone and annual corridorwide visitation limits. If data collected as a result of monitoring show that the conditions of Outstandingly Remarkable Values and the visitor experience are exceeding set standards, management actions which could include reduced visitation levels, would be taken to reduce visitation levels below the limits proposed in Alternative 4. Park managers would continue to use the visitor capacity goals from the *General Management Plan* for all facility planning purposes and would continue working towards those goals.

General Management Plan Developed Area Plans

The *General Management Plan* (GMP pp. 31-59) contains Developed Area Plans for areas within and adjacent to the river corridor. Development Concepts for areas within the river corridor must comply with the management elements of the Merced River Plan, (boundaries, classifications, protection of ORVs, Section 7 determination process, River Protection Overlay, management zoning, and the park's user capacity management program). In the case of El Portal, the new boundary and zoning plan for this alternative would amend the *General Management Plan*'s development concept for El Portal. To the extent that any Development Concept is less restrictive than the Merced River Plan, the Merced River Plan as revised by this plan controls. Actions adjacent to the river corridor but outside of the river boundary must also protect ORVs.

Table V-5 provides a summary of how this alternative affects the ORVs for each segment of the Merced River corridor.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
	MAIN STEM MERCED RIVER SEGMENTS	
1. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 4 would not affect the amount of the watershed that is within designated Wilderness. Alternative 4 would set wilderness management zone limits at levels consistent with the existing trailhead quota system and would use VERP to manage visitor use-related impacts in designated Wilderness. These measures would protect the natural, cultural, and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment includes views from the river and its banks of the glaciated river canyon, exposed bedrock riverbed, Merced Lake and Washburn Lake, the Bunnell Cascade, the confluence of tributaries, a large concentration of granite domes, and the Clark and Cathedral Ranges.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of the canyon, the riverbed, cascades, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment traverses a U-shaped, glacially carved canyon separated by cascades and soda springs below Washburn Lake.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 4.
	Recreation – This segment provides outstanding opportunities for solitude along the river, with primitive and unconfined recreation. There is a spectrum of levels of recreational use. River-related recreational opportunities include day hiking, backpacking, horseback riding and packing, camping, and enjoyment of natural river sounds. Untrailed tributaries provide enhanced opportunities for solitude.	*Recreation* – Under Alternative 4, visitor use of wilderness areas would continue to be managed under management zone limits set consistent with the existing trailhead quota levels, and would implement VERP. VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. River-related recreational opportunities would continue to be available to wilderness visitors. Visitors would continue to have access to a spectrum of recreation opportunities.
	Biological – This segment includes a nearly full range of intact Sierran riverine environments; high-quality riparian, meadow, and aquatic habitats (such as the meadow at Washburn Lake), and special-status species such as mountain yellow-legged frog.	*Biological* – Under Alternative 4, visitor use of wilderness areas would be managed under management zone limits set consistent with existing wilderness management programs (trailhead quotas, WIMS, etc.) and through VERP. Implementation of these measures would protect the biological resources from visitor use-related impacts.
	Cultural – This segment includes portions of a prehistoric trans-Sierra route in use for thousands of years and many prehistoric sites. There are many historic resources such as homestead sites, trails, river crossings, High Sierra Camp sites, and structures.	*Cultural* – Under Alternative 4, visitor use of wilderness areas would be managed under management zone limits set at existing trailhead quota system levels and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.
	Hydrologic Processes – The segment is characterized by a free-flowing river and excellent water quality. The river gradient drops from 13,000 to 6,000 feet in elevation. There are examples of natural conditions, including glacial remnants, a logjam in Little Yosemite Valley that is hundreds of years old, and numerous cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character, its gradient, glacial remnants or cascades. Water quality in wilderness areas would be protected under Alternative 4 through management zone limits on visitor use and through implementation of VERP with monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Main Stem-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wilderness segment by managing development or uses in wilderness areas that would adversely affect the segment's ORVs.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
2. Yosemite Valley	*Scenic* – This segment provides magnificent views from the river and its banks of waterfalls (Nevada, Vernal, Illilouette, Yosemite, Sentinel, Ribbon, Bridalveil, and Silver Strand), rock cliffs (Half Dome, North Dome/Washington Column, Glacier Point, Yosemite Point/Lost Arrow Spire, Sentinel Rock, Three Brothers, Cathedral Rock, and El Capitan), and meadows (Stoneman, Ahwahnee, Cook's, Sentinel, Leidig, El Capitan, and Bridalveil). There is a scenic interface of river, rock, meadow, and forest throughout the segment.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of waterfalls and rock cliffs from the river and its banks. Implementation of Alternative 4 would protect and enhance the scenic views of meadows through management zone limits limiting visitor use in the Valley and implementation of management actions under VERP, as needed, to address visitor-related impacts in meadows.
	Geologic Processes/Conditions – This segment contains a classic, glaciated, U-shaped valley, providing important examples of a mature meandering river; hanging valleys such as Yosemite and Bridalveil Creeks; and evidence of glaciation (e.g., moraines below El Capitan and Bridalveil Meadows).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 4.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and sightseeing to hiking. Yosemite Valley is one of the premier outdoor recreation areas in the world.	*Recreation* – Implementation of Alternative 4 would protect and enhance recreation in the Valley by managing visitor use levels through management zone limits, and management actions taken under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of river-related recreational opportunities.
	Biological – Riparian areas and low-elevation meadows are the most productive communities in Yosemite Valley. The high quality and large extent of riparian, wetland, and other riverine areas provide rich habitat for a diversity of river-related species, including special-status species, neotropical migrant songbirds, and numerous bat species.	*Biological* – Implementation of Alternative 4 would protect and enhance low-elevation meadows, wetlands, riparian areas, and other riverine areas through management of visitor use levels through management zone limits and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains evidence of thousands of years of human occupation reflected in a large number of archeological sites and continuing traditional use today. Nationally significant historic resources are found here, such as designed landscapes and developed areas, historic buildings, and circulation systems (trails, roads, and bridges) that provide visitor access to the sublime views of natural features that are culturally valuable.	*Cultural* – Implementation of Alternative 4 would protect and enhance cultural resources through management of visitor use levels through management zone limits, and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a meandering river, world-renowned waterfalls, an active flood regime, oxbows, unique wetlands, and fluvial processes.	*Hydrologic Processes* – Visitor use would not affect the Valley's spectacular waterfalls or the river's meandering character, flood regime, or fluvial processes. Implementation of Alternative 4 would protect and enhance wetlands through management of visitor use levels through management zone limits and implementation of management actions under VERP, as needed, to address visitor-related impacts on wetland areas.
Yosemite Valley Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Yosemite Valley segment by managing development or uses that would adversely affect the segment's ORVs.
3. Gorge[a]	*Scenic* – This segment provides views from the river and its banks of the Cascades, spectacular rapids among giant boulders, Wildcat Fall, Tamarack Creek Fall, the Rostrum, and Elephant Rock.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of the Cascades, rapids, waterfalls, or rock formations from the river and its banks.
	Geologic Processes/Conditions – This segment is characterized by a classic V-shaped river gorge with a continuous steep gradient.	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts and would not be affected by Alternative 4.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
	Recreation – This segment provides a spectrum of river-related recreational opportunities, such as picnicking, fishing, photography, and sightseeing.	*Recreation* – Implementation of Alternative 4 would protect and enhance recreation in the Gorge by managing visitor use levels through management zone limits and implementing management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of river-related recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas and associated special-status species that are largely intact and almost entirely undisturbed by humans.	*Biological* – Implementation of Alternative 4 would protect and enhance the diverse riparian areas and their associated special-status species by managing visitor use levels through management zone limits and implementing specific management actions under VERP, as needed, to address visitor-related impacts on riparian areas and related species.
	Cultural – This segment contains cultural resources, including prehistoric sites and historic sites and structures such as those relating to historic engineering projects.	*Cultural* – Implementation of Alternative 4 would protect and enhance cultural resources by managing visitor use levels through management zone limits, and by implementing management actions under VERP, as needed, to address visitor-related impacts.
	Hydrologic Processes – This segment is characterized by exceptionally steep gradients (2,000-foot elevation drop in approximately 6 miles).	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts and would not be affected by Alternative 4.
Gorge Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Gorge segment by managing development or uses that would adversely affect the segment's ORVs.
4. El Portal	*Geologic Processes/Conditions* – This segment contains a transition from igneous to metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, or to the proposed corridor boundary and management zoning for El Portal, and would not be affected by Alternative 4.
	Recreation – This segment provides a range of river-related recreational opportunities, in particular whitewater rafting and kayaking (class III to V) and fishing.	*Recreation* – Implementation of Alternative 4 would protect and enhance recreation in El Portal through adoption of management zone limits to manage visitor use levels in El Portal and implementation of specific management actions, as needed, to address visitor experience conditions. The proposed El Portal boundary and the management zoning proposed would not affect access to the spectrum of recreational opportunities.
	Biological – This segment contains riverine habitats such as riparian woodlands and associated federal and state special-status species, including Tompkin's sedge and Valley elderberry longhorn beetle and its critical habitat (elderberry shrub). Expanses of north-facing habitat allow unlimited access to the riparian zone for wildlife species.	*Biological* – Implementation of Alternative 4 would protect and enhance these biological resources through adoption of management zone limits to manage use levels in El Portal, implementation of specific management actions taken under VERP, as needed, to address user-related impacts, and implementation of the proposed boundary and zoning.
	Cultural – This segment contains some of the oldest archeological sites in the Yosemite area, as well as many historic Indian villages and traditional gathering places. River-related historic resources include structures related to early tourism and industrial development.	*Cultural* – Implementation of Alternative 4 would protect and enhance cultural resources through implementation of a boundary that incorporates cultural resources within a quarter-mile of the river. In addition, use of management zone limits to manage visitor use levels, and implementation of management actions under VERP, as needed, to address visitor-related impacts, would protect and enhance cultural resources.
	Hydrologic Processes – This segment is characterized by seasonally continuous rapids.	*Hydrologic Processes* – These hydrologic processes are not sensitive to visitor use impacts, and would not be affected by Alternative 4.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
El Portal Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the El Portal segment by managing development or uses that would adversely affect the segment's ORVs.
	SOUTH FORK MERCED RIVER SEGMENTS	
5. Wilderness	*Scientific* – These segments of the river corridor constitute a highly significant scientific resource because the watershed is largely within designated Wilderness in Yosemite National Park.	*Scientific* – Alternative 4 would not affect the amount of the watershed that is within designated Wilderness. Alternative 4 would implement management zone limits set at existing wilderness trailhead quota levels, along with implementation of VERP, to manage visitor use in designated Wilderness. This would protect the natural, cultural, and wilderness values and ensure that the river corridor continues to be a scientific resource.
	Scenic – This segment provides views from the river and its banks of unique river features, including large pothole pools within slickrock cascades, old growth forest, and meadows.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of pothole pools within slickrock cascades or old growth forest. Under Alternative 4, management zone limits would limit visitor use of wilderness areas based on existing wilderness trailhead quotas and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Geologic Processes/Conditions – This segment is characterized by glaciated valleys in the high country and V-shaped canyons above Wawona. Moraine meadows and soda springs above Gravelly Ford are also unique, river-related geologic features.	*Geologic Processes/Conditions* – Most of these geologic processes and conditions are not sensitive to visitor use impacts and would not be affected by Alternative 4. Under Alternative 4, management zone limits would limits visitor use of wilderness areas based on existing trailhead quotas and through VERP. Implementation of these measures would protect meadows and other sensitive areas from visitor use-related impacts.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation. This segment of the river is predominantly without trails, with the exception of four bridgeless trail crossings in the upper reaches of the segment.	*Recreation* – Under Alternative 4, visitor use of wilderness areas would be managed under management zone limits set at existing trailhead quota system levels, along with VERP. VERP would protect the opportunities for solitude by tracking visitor encounters and taking management actions to reduce encounters, as needed. Visitors would continue to have access to outstanding opportunities for river-related recreation.
	Biological – This segment includes a nearly full range of riverine environments typical of the Sierra Nevada. Examples of river-related federal and state special-status species include Wawona riffle beetle and mountain yellow-legged frog.	*Biological* – Under Alternative 4, visitor use of wilderness areas would be managed under management zone limits set at existing wilderness trailhead quota levels and through VERP. Implementation of these measures would protect the riverine communities and special-status species from visitor use-related impacts.
	Cultural – This segment includes river-related prehistoric sites and resources and reflects historic stock use and cavalry activities.	*Cultural* – Under Alternative 4, visitor use of wilderness areas would be managed under management zone limits set at existing wilderness trailhead quota limits and through VERP. Implementation of these measures would protect cultural resources from visitor use-related impacts.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
	Hydrologic Processes – This segment is characterized by a free-flowing river and excellent water quality.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character. Water quality in wilderness areas would be protected under Alternative 4 through management zone limits that are based on existing trailhead quotas and that limit visitor use in wilderness. In addition, VERP would include monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
South Fork-Wilderness Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the South Fork Wilderness segment by managing development or uses that would adversely affect the segment's ORVs.
6. Impoundment[b]	*Scenic* – This segment provides views from the river and its banks of the river and Wawona Dome.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of the river or Wawona Dome.
	Hydrologic Processes – This segment has excellent water quality.	*Hydrologic Processes* – Water quality would be protected under Alternative 4 through implementation of management zone limits and VERP, which would include monitoring of water quality conditions and management action taken as needed to address any adverse change in conditions.
Impoundment Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Impoundment segment by managing development or uses that would adversely affect the segment's ORVs.
7. Wawona	*Scenic* – This segment provides views from the river and its banks of Wawona Dome.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of the river or Wawona Dome.
	Recreation – This segment offers opportunities to experience a spectrum of river-related recreational activities, from nature study and photography to hiking.	*Recreation* – Implementation of Alternative 4 would protect and enhance recreation in Wawona through adoption of management zone limits to limit visitor use and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to a spectrum of recreational opportunities.
	Biological – This segment contains a diversity of river-related species, wetlands, and riparian habitats. There are federal and state special-status species in this segment, including the Wawona riffle beetle.	*Biological* – Implementation of Alternative 4 would protect and enhance wetlands, riparian habitats, and special-status species through adoption of management zone limits to limit visitor use levels and management actions taken under VERP, as needed, to address visitor-related impacts to sensitive vegetation or species.
	Cultural – This segment contains evidence of thousands of years of human occupation, including numerous prehistoric and historic Indian villages, historic sites, structures, and landscape features related to tourism, early Army and National Park Service administration, and homesteading.	*Cultural* – Implementation of Alternative 4 would protect and enhance cultural resources through adoption of management zone limits to limit visitor use levels and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.

Table V-5
Effect of Alternative 4 on the ORVs of the Merced River

Segment Number and Name	ORVs (by category)	Effect of Alternative 4 on the ORVs
Wawona Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Wawona segment by managing development or uses that would adversely affect the segment's ORVs.
8. Below Wawona	*Scenic* – This segment provides views from the river and its banks of continual whitewater cascades in the deep and narrow river canyon in a untrailed, undisturbed environment.	*Scenic* – Implementation of Alternative 4 would not affect the scenic views of whitewater cascades or untrailed, undisturbed environment.
	Geologic Processes/Conditions – This segment contains a transition from Paleozoic Era igneous to Cretaceous Period metasedimentary rocks (metasedimentary rocks are among the oldest in the Sierra Nevada).	*Geologic Processes/Conditions* – These geologic processes and conditions are not sensitive to visitor use impacts, and would not be affected by Alternative 4.
	Recreation – This segment provides outstanding opportunities for river-related solitude, enjoyment of natural river sounds, and primitive and unconfined recreation in an untrailed, undisturbed environment. River-related recreational opportunities include hiking, fishing, and whitewater kayaking.	*Recreation* – Implementation of Alternative 4 would protect and enhance recreation through adoption of management zone limits to limit visitor use levels, and implementation of management actions under VERP, as needed, to address visitor experience conditions. Visitors would continue to have access to outstanding river-related recreational opportunities.
	Biological – This segment is characterized by diverse riparian areas that are intact and largely undisturbed by humans. River-related federal and state special-status species in this segment include the Wawona riffle beetle.	*Biological* – Implementation of Alternative 4 would protect riparian areas and special-status species through adoption of management zone limits to limit visitor use levels, and implementation of management actions under VERP, as needed, to address visitor-related impacts in sensitive areas.
	Cultural – This segment contains archeological sites and historic resources such as trail segments representing early cavalry activity.	*Cultural* – Implementation of Alternative 4 would protect and enhance cultural resources through adoption of management zone limits to limit visitor use levels and implementation of management actions under VERP, as needed, to address visitor-related impacts on cultural resources.
	Hydrologic Processes – This segment is characterized by a free-flowing river with continual whitewater cascades.	*Hydrologic Processes* – Visitor use would not affect the river's free-flowing character and whitewater cascades.
Below Wawona-Summary		The use of existing user capacity measures, along with the other elements of the Merced River Plan (classifications, boundaries, ORVs, management zoning, the River Protection Overlay, VERP, and the Section 7 determination process) would result in protection of the ORVs of the Below Wawona segment by managing development or uses that would adversely affect the segment's ORVs.

NOTES:
a The Cascades Diversion Dam was removed in 2004. The segment that was formerly designated as 3a has been combined with the segment formally designated 3b and this entire area forms segment 3.
b The Impoundment would become part of segment 7, Wawona, if an alternative water source for the area was secured and the impoundment was removed.