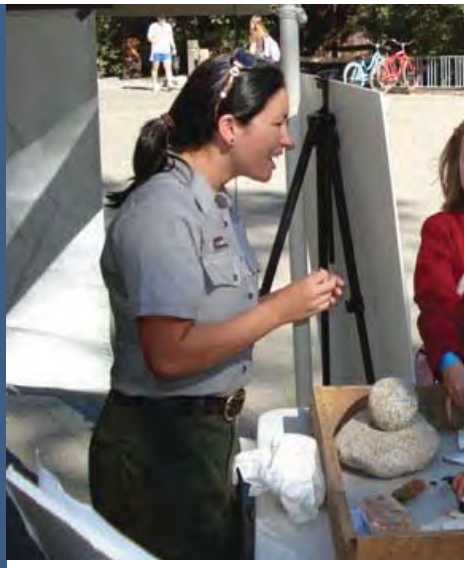
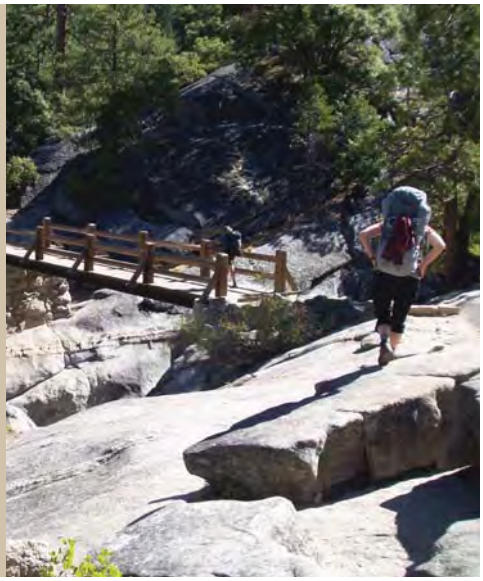
Yosemite National Park

National Park Service
U.S. Department of the Interior







Merced Wild and Scenic River

Final Comprehensive Management Plan and Environmental Impact Statement

Volume 1: Chapters 1–8



February 2014

Providing Access and Protecting Resources

United States Department of the Interior

NATIONAL PARK SERVICE

Yosemite National Park
P. O. Box 577
Yosemite, California 95389

IN REPLY REFER TO:
L7617 (YOSE-PLN)

Dear Friends of Yosemite National Park:

On behalf of the National Park Service (NPS), I am pleased to announce the release of the *Merced Wild and Scenic River Final Comprehensive Management Plan and Environmental Impact Statement* (*Final Merced River Plan/EIS*). The plan is the result of many years of rich collaboration between scientists, planners, American Indian tribes, stakeholder groups, and members of the public. It brings forward the best in science, stewardship, and your ideas to create a robust vision for the protection of the Merced Wild and Scenic River over the next 20 years.

The *Final Merced River Plan/EIS* reflects a deep commitment to public engagement and collaboration. The NPS hosted 54 public meetings and 12 webinars during the development of the plan in order to gather input from the public. The NPS also worked closely with traditionally-associated American Indian tribes and groups, historic preservation experts, and other stakeholders to gather concerns and input on the draft plan. Collectively, this input has had a significant influence on the content of the *Final Merced River Plan/EIS*.

The centerpiece of the *Final Merced River Plan/EIS* is a multi-faceted program to ensure the continual protection and enhancement of the rare, unique, and exemplary qualities of the Merced River. Current scientific studies indicate that the river is in good condition, yet this plan capitalizes on the opportunity to further enhance its condition. Actions included in the preferred alternative provide for the restoration of over 180 acres of meadow and riparian habitat. Parking areas will be relocated away from sensitive riparian areas and abandoned infrastructure will be removed from meadows, riverbanks, and culturally-sensitive sites. A robust monitoring program will allow park management to evaluate restoration efforts, monitor potential threats to the river, and ensure that the Merced River's unique values are protected for future generations.

The plan's preferred alternative will retain the essence of Yosemite, ensuring that the experiences enjoyed by generations of families are sustained over time. Visitors will continue to have the freedom to access Yosemite Valley by private vehicle, with expanded options for public transit and expanded shuttle bus service throughout the Valley. Traffic congestion and crowding will be reduced through changes to traffic patterns, reorganized day-use parking areas, and a strong commitment to managing user capacity in Yosemite Valley.

The *Final Merced River Plan/EIS* is available on the park website (http://www.nps.gov/yose/parkmgmt/mrp.htm) and the NPS Planning, Environment, and Public Comment website (http://parkplanning.nps.gov/yose_mrp). To request printed documents or CDs, e-mail yose_planning@ nps.gov, call (209) 379-1110, or write the Superintendent, Attn: Final Merced River Plan/EIS, P.O. Box 577, Yosemite National Park, CA 95389. A minimum 30-day no action period will begin on the date the Environmental Protection Agency publishes the notice of availability of the final plan in the *Federal Register*, after which the NPS will prepare a record of decision (ROD). After approval of the ROD by the Regional Director, the park will announce the selected plan through local and regional press and on the project website. The official responsible for implementation is the Superintendent of Yosemite National Park.

Thank you for your interest and for taking part in creating a lasting vision for the protection of the Merced River.

Sincerely,

Don L. Neubacher
Superintendent

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Merced Wild and Scenic River
Final Comprehensive Management Plan and Environmental Impact Statement

Yosemite National Park

Lead Agency: National Park Service

ABSTRACT

This *Merced Wild and Scenic River Final Comprehensive Management Plan / Environmental Impact Statement* is intended to guide the management of the Merced Wild and Scenic River within the boundaries of Yosemite National Park for the next 20 or more years. The plan and its environmental impact statement, which evaluates the potential impacts of the plan and its range of alternatives, are integrated in this document and are referred to collectively as the *Final Merced River Plan / EIS*.

The *Final Merced River Plan* directs the protection of the river's free-flowing condition and the values that make it worthy of designation and will:

- Establish the boundaries and segment classifications (as wild, scenic, or recreational) of the Merced Wild and Scenic River (see Chapter 3) and provide a clear process for protection of the river's free-flowing condition in keeping with WSRA Section 7 (see Chapter 4).
- Refine descriptions of the river's *outstandingly remarkable values* (ORVs), which are the unique, rare, or exemplary river-related characteristics that make the river eligible for inclusion in the National Wild and Scenic Rivers System and document the conditions of the ORVs, water quality, and free-flowing condition of the river (see Chapter 5).
- Identify management objectives for the river and specific actions and/or programs that will be implemented to achieve the objectives, and commit to a program of ongoing studies and monitoring to ensure that river values are protected and enhanced over the life of the plan (see Chapter 5).
- Determine the type and location of lands and facilities (both current and future) that provide for public use and enjoyment of the river resource while protecting and enhancing river values (See Chapter 7).
- Establish a user-capacity program that addresses the kinds and amounts of public use that the river corridor can sustain while protecting and enhancing the river's outstandingly remarkable values (see Chapters 6 and 7).
- Fulfill the specific direction of the 1987 legislation designating the Merced River as a component of the National Wild and Scenic River System (16 U.S.C. Section 1274 (a)(62)(A)) and make appropriate revisions to the park's 1980 *General Management Plan*.

The *Final Merced River Plan / EIS* presents and analyzes six alternatives. Alternative 1 (No Action) would continue current management and trends in the condition of river values. Action Alternatives 2-6 would protect and enhance river values by improving conditions that threaten sensitive meadows, archeological resources, and scenic vistas. The action alternatives vary primarily in the degree of restoration and the amount of visitor use that could be accommodated by the commensurate level of facilities and services necessary to protect river values under each scenario.

This document is available for public inspection online at http://www.nps.gov/yose/parkmgmt/mrp.htm. If you have questions regarding this document, please contact: Superintendent, Yosemite National Park, ATTN: Merced River Plan, P.O. Box 577, Yosemite, California 95389. To request a printed copy or CD of this document (available in limited quantity), please email Yose_Planning@nps.gov.

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Yosemite National Park

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U.S. Department of the Interior



Merced Wild and Scenic River
Final Comprehensive Management Plan and Environmental Impact Statement

Volume 1: Executive Summary & Chapters 1-8

February 2014

Cover photos:
Right: The Merced Wild and Scenic River reflects Yosemite Falls on a winter day. Photo copyright by Christine White Loberg
Top left: Park Ranger Erin Davenport talks to young visitors about archeological resources in Yosemite National Park. NPS photo
Center left: Park Ranger/Indian Cultural Demonstrator Ben Cunningham-Summerfield plays the flute in the Museum. NPS photo
Bottom left: Backpackers follow the Mist Trail across the Merced River. NPS photo by Jim Donovan

MERCED WILD AND SCENIC RIVER FINAL COMPREHENSIVE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Volume 1: Executive Summary and Chapters 1-8

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EXECUTIVE SUMMARY

INTRODUCTION

The Merced Wild and Scenic River originates at the crest of the Sierra Nevada in Yosemite National Park, descending almost 10,000 feet on its 81-mile journey through the park and the El Portal Administrative Site. The U.S. Congress designated the Merced River in Yosemite as a component of the National Wild and Scenic Rivers System in 1987 (Public Law 100-149). As the Merced Wild and Scenic River leaves National Park Service jurisdiction, the remaining 41 miles are managed by the U.S. Forest Service and the Bureau of Land Management.

LEGAL AND POLICY FRAMEWORK

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (WSRA) requires comprehensive planning for a Wild and Scenic River to provide for the protection of the river's free-flowing condition, water quality, and outstandingly remarkable values, collectively referred to as "river values." This *Merced Wild and Scenic River Final Comprehensive Management Plan and Environmental Impact Statement* (*Final Merced River Plan/EIS*) describes how the National Park Service will fulfill this mandate. The plan accomplishes the following:

- Establishes the boundaries and segment classifications (wild, scenic, or recreational) of the Merced Wild and Scenic River. The Wild and Scenic Rivers Act requires federal agencies to establish legal boundaries for each federally-administered river in the National Wild and Scenic Rivers System. **Chapter 3** explains the legal requirements for establishing a river corridor boundary and classifying its segments. The chapter defines the river corridor boundary for the Merced River in Yosemite National Park and describes the eight segments within the corridor and their classifications.
- Establishes a formal process for protecting the river's free-flowing condition, in keeping with WSRA Section 7. Section 7 is a key provision of WSRA that restricts water resources projects, projects within the bed and banks of the Merced River, or projects that affect the river's free-flowing condition. **Chapter 4** explains the legal requirements for protecting the river's free-flowing condition and describes the process that will be used to fulfill that requirement.
- Refines descriptions of the river's outstandingly remarkable values (ORVs), which are the river-related rare, unique, or exemplary characteristics that make the river worthy of inclusion in the National Wild and Scenic Rivers System. The plan identifies 20 outstandingly remarkable values (ORVs) for the Merced River. **Chapter 5** provides an orientation to the river values and the concepts of management standards, adverse impact, and degradation.
- Documents the condition of river values, including water quality, free-flowing condition, and outstandingly remarkable values (ORVs), and establishes a management program to protect and enhance these values. **Chapter 5** discusses each river value in detail, including a summary of its current condition, associated management concerns, and specific actions needed for its protection.The chapter describes in detail the monitoring program the NPS will use to ensure that all river values remain protected and enhanced.
- Establishes a user-capacity program that addresses the kinds and amounts of public use that the river corridor can sustain while protecting and enhancing the river's outstandingly remarkable values. Carrying capacity, a term used interchangeably with user capacity, is defined as "the

quantity of recreation use which an area can sustain without adverse impact on the outstandingly remarkable values and free-flowing character of the river area, the quality of recreation experience, and public health and safety."[1] **Chapter 6** describes how key components of the *Final Merced River Plan/EIS* work together to meet the Wild and Scenic Rivers Act requirement to address user capacities when preparing a comprehensive river management plan.

- Defines the size and location of the facilities (both current and future) needed to provide for public use and enjoyment of the river resource, consistent with the protection and enhancement of river values. The Wild and Scenic Rivers Act (WSRA) requires that management plans prepared for rivers designated under the act will address the "development of lands and facilities" in the river area. WSRA and its implementing guidelines provide direction on the types of facilities that may be maintained within a river area. **Chapter 7** describes how the information provided in Chapter 5 was used to evaluate the existing and proposed major public use facilities in the river corridor. It also identifies the facilities that will be removed or relocated under each alternative.

Other Applicable Laws and Policies

In addition to complying with the WSRA requirements outlined above, the *Final Merced River Plan/EIS* complies with all other applicable statutes and management policies. The *Final Merced River Plan/EIS* documents the results of planning processes required by the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and other legal mandates governing National Park Service (NPS) decision-making.

DOCUMENT OVERVIEW

The *Final Merced River Plan/EIS* is organized into two volumes and supported by 20 appendices. Volume 1 contains Chapters 1-8, which provide the analytical framework for the alternatives as well as a detailed description of each alternative. Chapters 1–3 describe the Merced Wild and Scenic River, discuss the purpose and need for comprehensive planning under the Wild and Scenic Rivers Act, and define the boundaries and segments of the Merced Wild and Scenic River. Chapter 4 describes the Section 7 determination process. Chapter 5 documents river value conditions and explains the monitoring and management program that will ensure they remain protected. Chapter 6 explains how user capacities were established and how they will be managed. Chapter 7 includes an assessment of all facilities and services in order to determine their necessity and potential impact to river values. Chapter 8 describes six alternatives (five action alternatives and one "No Action" alternative). Volume 2 contains Chapters 9-13. Chapter 9 discloses the environmental consequences associated with each alternative. Chapter 10 summarizes the extensive consultation and coordination efforts conducted for the plan. Chapters 11–13 provide a list of preparers, a glossary and list of acronyms, and references. Appendices A-T provide additional supporting analyses for the actions proposed in the *Final Merced River Plan/EIS*.

Purpose and Need for the Merced River Plan

The National Environmental Policy Act (NEPA) requires federal agencies to describe the purpose and need for agency actions. The purpose and need for the *Final Merced River Plan/EIS* is to preserve the Merced River in free-flowing condition and to protect the river's water quality and outstandingly remarkably values for the

[1] *National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas* (Secretarial Guidelines)

benefit of present and future generations. **Chapter 2** describes the purpose and need for the plan, the legal and policy framework, the major planning issues identified during internal and public scoping, and the relationship of this plan to other plans and projects.

Alternatives

The National Environmental Policy Act (NEPA) also requires federal agencies to rigorously explore a range of reasonable alternatives when planning for a major federal action. **Chapter 8** presents the six alternatives considered in the *Final Merced River Plan/EIS*. All of the action alternatives meet the mandates of the legal and policy framework for the plan.

Alternative 1 (No Action) represents a continuation of current management practices and provides a baseline from which to compare the action alternatives. Alternatives 2-6 feature a wide range of visitation levels, desired visitor experiences, and restoration objectives based on public feedback received throughout the planning process. Across the alternatives, peak visitation for Yosemite Valley ranges from a low of 13,200 people per day (Alternative 3) to a high of 21,800 people per day (Alternative 6). Alternatives 2 and 3 explored a Yosemite with a smaller development footprint and fewer visitor services, resulting in a more self-reliant visitor experience. Alternative 4 examined a Yosemite with a smaller number of lodging units and a significant increase in camping opportunities. Alternative 5 (Preferred) proposes essential restoration within 100 feet of the river, moderate increases in camping, and visitation at levels seen in recent years. A description of Alternative 5 (Preferred) and how it has changed in response to public and agency comment is included in subsequent sections. Alternative 6 explored expanding visitor services to support future increases in visitation. Complete descriptions of the alternatives are provided in Chapter 8.

Affected Environment and Environmental Consequences

"Affected Environment and Environmental Consequences" (**Chapter 9**) identifies and describes the natural and cultural resources and values potentially affected by the alternatives presented in Chapter 8 and evaluates the impacts of each alternative in comparison to the No Action Alternative. Chapter 9 examines the environmental consequences associated with implementing each of the alternatives.

Consultation and Coordination

Throughout the Merced River planning process, an extensive effort was made to involve professionals from all aspects of river and park management, and was done so in consultation with traditionally associated American Indian tribes and groups, elected officials, agency partners, local communities, park visitors, and private citizens. **Chapter 10** summarizes the consultation and coordination efforts undertaken for the *Final Merced River Plan/EIS*. The plan was developed in accordance with the NEPA implementing regulations issued by the Council on Environmental Quality (CEQ), which require diligence in involving any interested or affected members of the public in the planning process (40 CFR 1508.22). Compliance with the National Historic Preservation Act (NHPA) was completed on a parallel track, using the NHPA Section 106 review process to coordinate the evaluation of impacts to cultural resources. The final plan represents a strong commitment to public engagement; the alternatives and analyses included in the plan have been shaped by approximately 30,000 public comments, as well as by significant consultation with traditionally associated American Indian tribes and groups, agency partners, and other key stakeholders.

ALTERNATIVE 5 (PREFERRED) OVERVIEW

Enhanced Visitor Experience and Essential River Bank Restoration

The *Final Merced River Plan/EIS* proposes actions that will improve the visitor experience in the park. Alternative 5 (Preferred) proposes to accommodate peak visitation at a level similar to recent years—approximately 20,100 people per day in East Yosemite Valley. Visitors to Yosemite Valley will see marked improvements in circulation, parking availability, and traffic flow. Coupled with enhancements to meadows, improvements to river access, and extensive riverbank restoration, the visitor experience would be significantly improved. Visitors to Yosemite Village will experience an enhanced "sense of arrival" to the heart of Yosemite Valley, as the primary day-use parking area would be fully integrated with pathways to visitor services, restrooms, and food service. Families will enjoy expanded camping opportunities in East Yosemite Valley, with new walk-in, drive-in, and group camping sites provided at several locations. Recreational activities such as rafting, bicycling, and ice skating will continue, with rental facilities and services provided at locations outside the river corridor. Boaters would be able to float new and challenging river reaches, framed by views of El Capitan and Half Dome.

The *Final Merced River Plan/EIS* improves the visitor experience while ensuring that the river and Yosemite National Park are "protected for the benefit and enjoyment of present and future generations."[2] Chapter 8 outlines a number of actions common to all alternatives that will protect and enhance river values. Such actions include restoration of riparian areas, removal of riverbank riprap, relocation of camping and parking areas away from the river, restoration of meadow areas, and the removal of abandoned infrastructure in the river corridor. Collectively, the actions proposed in Alternative 5 (Preferred) will enhance river values by restoring 189 acres of habitat, mostly in meadow and riparian areas. Restored riparian and meadow habitats will protect water quality and enhance the interconnected river values, both natural and cultural, of the Merced River. Alternative 5 (Preferred) is the "environmentally preferred" alternative for the *Final Merced River Plan/EIS*.

Proposed actions in Alternative 5 (Preferred) would:

- Restore 189 acres of meadow and riparian habitat.
- Significantly increase the campsite inventory in all river segments (+36%) and in Yosemite Valley (+37%).
- Slightly increase available lodging corridorwide (+3%) and in Yosemite Valley (+5%).
- Increase parking for Yosemite Valley day use (+8%).
- Make significant changes to the traffic circulation pattern in Yosemite Valley to meet ecological restoration goals while reducing traffic congestion.
- Establish a user capacity of 18,710 people at one time for Yosemite Valley, with peak visitation estimated at 20,100 visitors per day.
- Manage user capacity for East Yosemite Valley by rerouting traffic at the El Capitan Traffic Diversion prior to reaching established limits.

[2] 16 U.S.C. Section 1271(b)

SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL PLAN

The *Final Merced River Plan/EIS* has been shaped by coordination and consultation with members of the public, traditionally associated American Indian tribes and groups, agency partners, and other stakeholders. Many of the changes between the draft and final plans were the direct result of comments raised during public meetings or consultation efforts. This collaboration has produced a final plan that will improve visitor experience and better protect the Merced River's unique values.

Alternative 5 (Preferred), as presented in the *Final Merced River Plan/EIS,* includes several changes made in response to public comment and consultation. New development previously proposed for West Yosemite Valley has been eliminated, bicycle and raft rentals are relocated rather than removed, and proposed changes to lodging at Curry Village have been revised to better preserve historic resources. The primary changes to the draft preferred alternative are as follows:

- Increase the number of campsites proposed for Upper and Lower River Campgrounds to provide a total of 72 sites (60 walk-in, 10 auto sites, and two group sites).
- Increase total number of lodging units at Curry Village to 482 to account for units recently relocated from the rock-fall hazard zone.
- Relocate the Curry Village ice skating rink from within the river corridor to its original 1929 location at the south end of the Curry Overnight Parking area.
- Retain bicycle rentals in Yosemite Valley by moving the Curry Village and Yosemite Lodge rental facilities to locations outside of the river corridor.
- Provide raft rentals at a location outside of the river corridor.
- Eliminate the 100 parking spaces originally proposed for West Valley and increase the size of the El Portal Remote Parking Area to 300 spaces. Provide shuttle service from the El Portal parking lot to Yosemite Valley.
- Eliminate the Eagle Creek Campground originally proposed for West Valley.
- Eliminate the proposed 164-bed dormitory at the Huff House temporary employee housing area; retain the historic Huff House and 10 canvas tent cabins; add employee housing to locations outside the river corridor in Yosemite Valley and El Portal.
- Reduce the size of the Yosemite Village Day-use Parking Area to provide 750 parking spaces (from the 850 originally proposed) and provide 189 day-use parking spaces at the Curry Village Day-use Parking Area (the site of Huff House temporary employee housing).
- Retain Sugar Pine Bridge. Conduct further hydrologic impact study to determine the effects of the bridge on the river's alluvial nature. Consideration of bridge removal would involve tiered NEPA compliance and Section 106 Consultation.
- Remove Superintendent's House (Residence 1) and Garage.
- Retain the Ahwahnee and Yosemite Lodge swimming pools.
- Retain 50 historic canvas tents and 14 non-historic cabin-without-bath units at Boys Town and construct 52 new hard-sided cabin-with-bath units.
- Retain the Housekeeping Camp Store.

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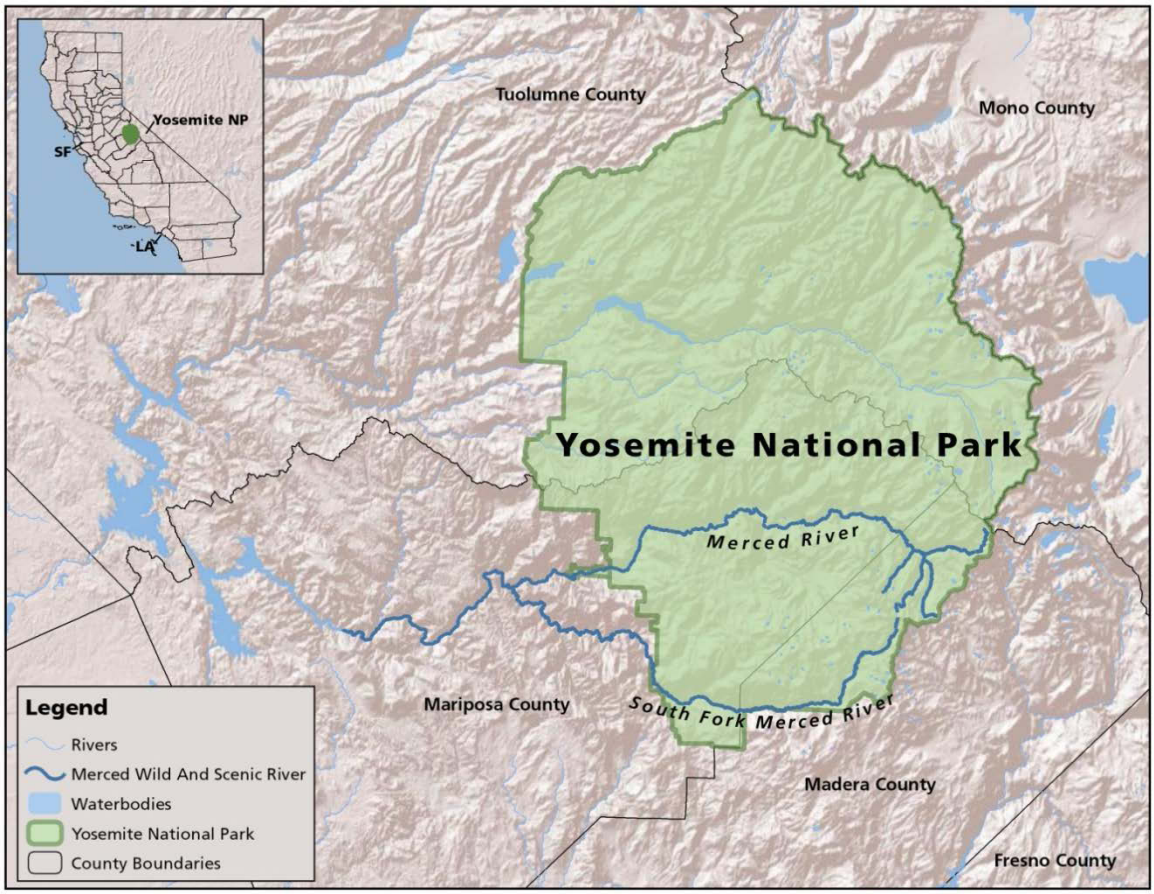
1. THE MERCED WILD AND SCENIC RIVER

The U.S. Congress designated the Merced River in Yosemite National Park as a component of the National Wild and Scenic Rivers System in 1987 (Public Law 100-149). This action amended the 1968 Wild and Scenic Rivers Act (WSRA) (16 USC 1271), which states:

> *"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."*

The Merced River (Figure 1-1) originates in Yosemite at the crest of the Sierra Nevada and descends almost 10,000 feet in elevation on its 81-mile journey through the park. The river has been central to this dramatic landscape for tens of thousands of years, and it continues to shape riparian and meadow communities and support a diverse suite of wildlife. The river corridor was home to American Indians for millennia, and cultural traditions associated with the river continue to the present day. The Merced River is also a focus for millions of Yosemite visitors who enjoy opportunities for recreation, education, reflection, and inspiration in its sublime beauty.

Figure 1-1: Merced Wild and Scenic River Overview Map



The National Park Service (NPS) is the managing agency for the portions of the Merced Wild and Scenic River in Yosemite and the El Portal Administrative Site. As part of this responsibility, the NPS must develop a Wild and Scenic River comprehensive management plan to guide long-term management and public use in the river corridor. The NPS has developed the plan in accordance with the mandates of the National Environmental Policy Act (NEPA), including an Environmental Impact Statement (EIS) and forthcoming Record of Decision. This document presents the comprehensive river management plan and associated EIS, collectively referred to as the *Merced Wild and Scenic River Final Comprehensive Management Plan and Environmental Impact Statement (Final Merced River Plan/EIS)*.

In addition to complying with the NEPA planning process, the *Final Merced River Plan/EIS* addresses the required elements of WSRA, the National Historic Preservation Act, and other legal mandates that govern decision making and planning in the NPS. The NPS expects the plan to have a lifespan of at least 20 years. The plan also fulfills the public review requirements under the California Environmental Quality Act for plan actions that will require issuance of a Clean Water Act Section 401 Water Quality Certification by the California Regional Water Quality Control Board.

THE WILD AND SCENIC RIVERS ACT

Congress passed the Wild and Scenic Rivers Act (WSRA) to counterbalance decades of dam building and river-related development in the country. WSRA requires the protection of some outstanding rivers in their natural, free-flowing state. A Wild and Scenic River has "outstandingly remarkable values" (ORVs) that make it worthy of special protection for the benefit and enjoyment of present and future generations. Federal land managers must protect and enhance these values. Today, WSRA protects 12,598 miles of 203 rivers as units of the National Wild and Scenic Rivers System. Two Wild and Scenic Rivers are located within Yosemite: the Merced River (designated in 1987) and the Tuolumne River (designated in 1984). The Merced River is one of 23 Wild and Scenic Rivers in California and one of six Wild and Scenic Rivers on the western slope of the Sierra Nevada.

REGIONAL SETTING

Within the Sierra Nevada range of California, the Merced River is one of 15 major river systems. Originating in Yosemite's alpine peaks, the Merced River flows west for 145 miles to its confluence with the San Joaquin River outside the park in the Central Valley, encompassing a drainage basin of 1,700 square miles. The first 122 miles of the Merced River are designated as Wild and Scenic; the NPS manages 81 miles of the river through Yosemite and El Portal, including both the Merced River's main stem and the South Fork Merced River. Within Yosemite, the river reaches contain some of the world's most admired scenery, including grand waterfalls and large, mid-elevation meadows. The U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) manage the 41 miles of the Wild and Scenic River outside of Yosemite (Public Law 102-432). The remaining 23 miles of the Merced River below Lake McClure and the New Exchequer Dam, located in the Central Valley, do not have Wild and Scenic River status.

The headwaters of the main stem of the Merced River originate in Yosemite in several watersheds: the Lyell Fork, Triple Peak Fork, Merced Peak Fork, and Red Peak Fork. These watersheds are at the far eastern side of the Merced River watershed. The Tuolumne, Mono, and San Joaquin River watersheds are to the north, east, and south. From its headwaters, the main stem of the Merced River flows freely through a wilderness landscape of alpine peaks, glacially carved valleys, and high-elevation meadows. The river makes a dramatic entry into Yosemite Valley, rushing over towering cliffs in prominent waterfalls. As the gradient lessens, the Merced River

meanders through the rich meadow and riparian habitat of Yosemite Valley. At the west end of Yosemite Valley, the canyon narrows and the river becomes a cascade of continuous rapids through the Merced Gorge. The gradient changes abruptly at the park boundary, where the river continues through El Portal on its journey through the Sierra Nevada foothills to the Central Valley of California.

The South Fork Merced River originates at the Sierra crest from the southwestern slopes of Triple Divide Peak and the west-facing slopes of Gale Peak and Sing Peak. The South Fork Merced River flows southwest through Yosemite Wilderness (south of the Clark Range) and the community of Wawona. The South Fork Merced River exits the park less than a mile below the Wawona Campground and then flows through the Sierra National Forest to the confluence with the main stem of the Merced River, west of El Portal.

The Merced River's main stem and the South Fork Merced River will be collectively referred to as the Merced River in this document.

GOALS OF THE FINAL MERCED RIVER PLAN / EIS

The 1980 *General Management Plan* for Yosemite National Park provides long-range management direction for Yosemite. The *Final Merced River Plan/EIS* will amend parts of the *General Management Plan* related to the Merced River corridor, as directed in the 1987 legislation designating the Merced River as a component of the National Wild and Scenic River System. In this legislation, Congress directed that:

> *"appropriate revisions to the general management plan for the park, and the boundaries, classification, and development plans for such portions need not be published in the Federal Register. Such revisions to the general management plan for the park shall assure that no development or use of park lands shall be undertaken that is inconsistent with the designation of such river segments (16 U.S.C. Section 1274 (a)(62)(A))."*

Appendix A summarizes the actions in the *Final Merced River Plan/EIS* that would amend the *General Management Plan*.

The overall goal of the *Final Merced River Plan/EIS* is to provide for public use and enjoyment of the river resource while protecting and enhancing the values for which the Merced River was designated a Wild and Scenic River. The NPS developed goals that are more specific for the *Final Merced River Plan/EIS* after analysis of public scoping comments. These specific goals of the plan are to:

- ***Protect and Enhance Ecological and Natural Resource River Values:*** Promote the ability of the Merced River to shape the landscape by reducing impacts to hydrological / geological processes, restoring floodplains and meadows, and protecting water quality.
- ***Provide Opportunities for Direct Connection to River Values:*** Support opportunities for people to experience and develop direct connections to the Merced River and its unique values as a place of cultural association, education, recreation, reflection, and inspiration.
- ***Establish a User Capacity Management Program:*** Establish a user capacity management program that provides for public use and enjoyment of the river resource while protecting and enhancing natural and cultural river values today and into the future.
- ***Determine Land Uses and Associated Developments:*** Provide clear direction on land uses, facilities, and services within the river corridor that are necessary for public use and provide for the protection of river values.

THIS DOCUMENT'S ORGANIZATION

The *Final Merced River Plan/EIS* is a three-volume set, with appendices provided on CD or on the park's website at http://www.nps.gov/yose/parkmgmt/mrp.htm. Figures 1-2 and 1-3 display the organization of the plan and the sections that comprise the *Merced Wild and Scenic River Final Comprehensive Management Plan/ Environmental Impact Statement*.

FIGURE 1-2: MRP/EIS ORGANIZATION

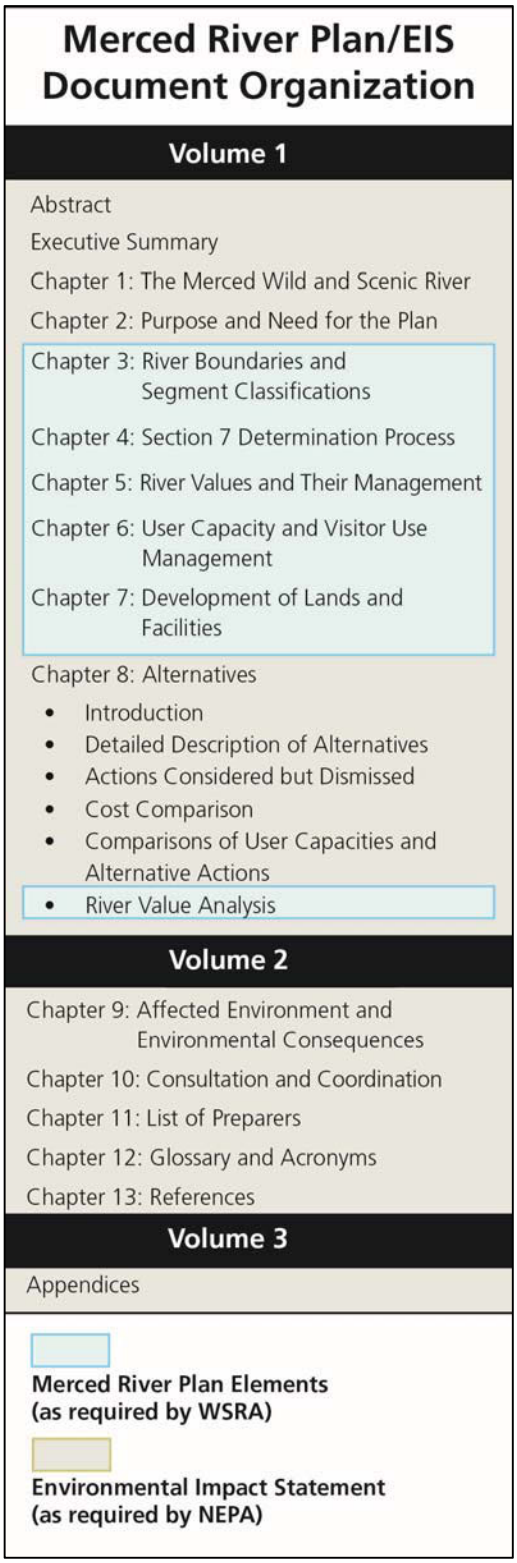
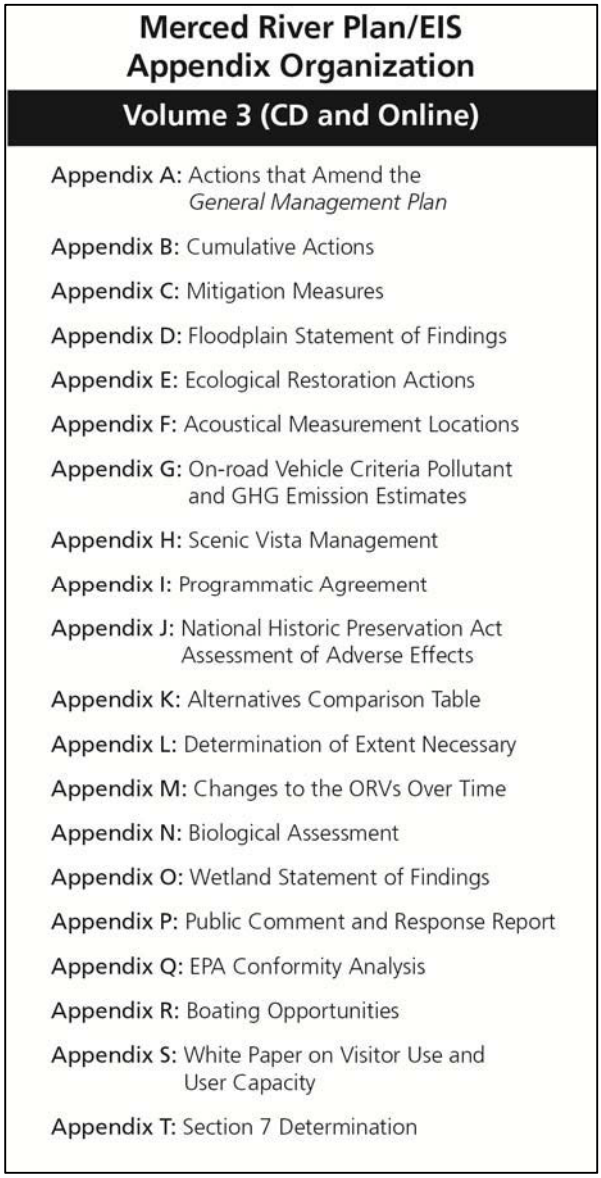


FIGURE 1-3: MRP/EIS APPENDIX ORGANIZATION



2. PURPOSE OF AND NEED FOR THE FINAL MERCED RIVER PLAN / EIS

This chapter describes the purpose and need for the *Final Merced River Plan/EIS* and discusses the issues and opportunities addressed in the plan. Specifically, this chapter includes:

- Statements of the purpose and need for taking action.
- The planning context for the plan, including the legal framework, recent legal history, and interrelationships with other plans.
- A discussion of issues and opportunities identified during the scoping process and considered in preparation of this plan, and issues dismissed from further analysis.

PURPOSE OF AND NEED FOR THE PLAN

The purpose of the *Final Merced River Plan/EIS* is to preserve the Merced River in free-flowing condition and to protect the water quality and the outstandingly remarkable values (ORVs) that make the river worthy of designation. In accordance with WSRA, "the plan shall address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of this Act" (WSRA Section 3(d)). This plan will fulfill the specific direction of the 1987 legislation designating the Merced River as a component of the National Wild and Scenic River System (16 U.S.C. Section 1274 (a)(62)(A)) and make appropriate revisions to the park's *1980 General Management Plan*.

The need for the *Final Merced River Plan/EIS* also stems from a 2009 Settlement Agreement under which the National Park Service (NPS) agreed to complete a new comprehensive management plan for the Merced Wild and Scenic River and the process to follow in doing so. The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) completed plans for the river segments within their jurisdiction. The finished plan for the Yosemite segments will complete the management plans needed for the entire Merced Wild and Scenic River.

LEGAL AND POLICY FRAMEWORK

The NPS Organic Act, passed by the U.S. Congress in 1916, provides fundamental management direction for all units of the National Park System. A key management provision in the Act is:

> *"[The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations . . . by such means and measure as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife 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."*

Congress amended the Organic Act with the 1970 General Authorities Act (16 USC 1a-1 et seq.), which affirms that all of the nation's parks—whether they include natural, cultural or historic resources—are united under the mission, purpose, and protection of the Organic Act. The 1978 Redwood National Park Expansion Act also amended the Organic Act, reaffirming the mandate and directing the NPS to manage park lands in a manner that would not degrade park values.

In addition to these key management-related statutes, federal management decisions must be consistent with national laws, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966, which define the process used to evaluate and make planning-related decisions. The following provides more detail on the NPS Organic Act and a summary of additional federal laws most relevant to this planning process, including WSRA, the Wilderness Act of 1964, and the 1998 Concessions Management Improvement Act.

National Park Service Organic Act and National Parks and Recreation Act

The NPS was created by the National Park Service Organic Act of 1916 (USC 2-4) for the purpose of promoting and regulating a system of national parks. This broad mandate has been translated into an extensive set of management policies which direct all aspects of park management (NPS 2006a).

The NPS has a specific set of policies in place to implement the requirements of law, fulfill management responsibilities under the NPS Organic Act, and guide agency operations. NPS *Management Policies* (2006) is the basic NPS policy document and the highest level of guidance in the NPS Directives System. Director's Orders are the second level of the Directives System, and they serve as a vehicle to clarify or supplement the *Management Policies*. Reference manuals or handbooks with detailed guidance make up the third level of the NPS Directives System.

Since 1978, the NPS has been required under the National Parks and Recreation Act (16 USC 1a-7) to prepare general management plans for all units of the National Park System. The relationship between the *Final Merced River Plan/EIS* and the *General Management Plan* for Yosemite National Park is described below under "Interrelationships with Other Plans and Projects."

Wild and Scenic Rivers Act Requirements

The Merced Wild and Scenic River's headwaters begin in Yosemite National Park and the river flows through the El Portal Administrative Site. As part of the lands administered by the National Park Service, the Merced River is also managed under the provisions of the laws, policies, and regulations applicable to all units of the National Park System. Section 10(c) of WSRA specifies that in case of conflicts between the mandates of the two systems, the more restrictive provisions apply.

The following sections of WSRA are most pertinent to the *Final Merced River Plan/EIS*:

Section 1: Congressional Declaration of Policy—Explains the intent of WSRA, in that designated rivers "shall be preserved in free-flowing condition, and ... their immediate environments shall be protected for the benefit and enjoyment of present and future generations" (16 USC 1271), as quoted in the first paragraph of "The Merced Wild and Scenic River" (Chapter 1).

Section 2: Classifications—Requires the river be classified and administered as "wild," "scenic," or "recreational" river segments, based on the condition of the river corridor at the time of designation. Designated river segments are classified in one of the three categories depending on the extent of development and accessibility along each section.

Section 3: Congressionally Designated Components, Establishment of Boundaries, Classifications, and Management Plans—Lists rivers that are congressionally designated as National Wild and Scenic Rivers System components. Section 3 requires the administrating agency to identify corridor boundaries

and to prepare a comprehensive management plan to "provide for the protection of the river values."

Section 7: Restrictions on Water Resources Projects—Directs federal agencies to protect the values of designated rivers from adverse effects of "water resources projects" within the bed and banks of the river. Section 7, one of the most vital components of WSRA, requires a rigorous process to ensure that proposed water resources projects, implemented or assisted by federal agencies within the bed and banks of designated rivers, do not have a "direct and adverse effect" on the values for which the river was designated.

Section 10: Management Direction—sets forth the management direction for designated river segments and includes the following:

- WSRA shall be administered to *protect and enhance* a river's ORVs. Insofar as possible, uses that are consistent with this and do not substantially interfere with public enjoyment and use of these values should not be limited (16 USC 1281[a]).
- In administration of a Wild and Scenic River, "primary emphasis shall be given to protecting its aesthetic, scenic, historic, archeologic, and scientific features. Management plans may establish varying degrees of intensity for its protection and development, based on the special attributes of the area" (16 USC 1281[a]).
- Wild and Scenic River segments inside congressionally designated Wilderness are subject to both WSRA and the Wilderness Act. Where the two conflict, the more restrictive (i.e., protective of resources) regulation will apply (16 USC 1281[b]).
- Any component of the National Wild and Scenic Rivers System administered by the NPS will become part of the National Park System and be subject to both WSRA and the acts under which the National Park System is administered. In the case of conflict among these Acts, the more restrictive provisions will apply (16 USC 1281[c]).

Section 10(e) enables administering federal agencies to enter into cooperative agreements with state and local governments to allow them to participate in the planning and administration of components of the Wild and Scenic Rivers System that include or adjoin state- or county-owned lands.

Section 12: Management Policies—Directs the managing agency to take management actions on lands under its jurisdiction adjacent to the designated river corridor that may be necessary to protect the river according to the purposes of WSRA.

1982 Final Revised Guidelines for Eligibility, Classification, and Management of River Areas (Secretarial Guidelines)

In 1982, the Secretaries of the Interior and of Agriculture jointly revised the guidelines for implementing WSRA. The revision, called the *National Wild and Scenic River System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas,* is referred to as the Secretarial Guidelines. Published in the *Federal Register* in 1982, the Secretarial Guidelines incorporated changes in WSRA necessary after more than a decade of use under the original 1970 guidelines, facilitating greater consistency in agency interpretation of WSRA.[1] The Secretarial Guidelines reflected new laws and regulations and responded to a 1979 presidential directive to consider river ecosystems in river evaluation and shorten river study time. The Secretarial Guidelines clarify the eligibility of free-flowing rivers and river segments, eliminate minimum

[1] "Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed for Inclusion in the National Wild and Scenic Rivers System under Section 2, Public Law 90-542"

length guidelines, revise the definition of sufficient flow, revise water quality management, and accelerate the schedule for congressionally authorized studies (USDI and USDA 1982).

Wilderness Act

The Yosemite Wilderness was added to the National Wilderness Preservation System by the 1984 California Wilderness Act (the same act that established the Tuolumne Wild and Scenic River, parts of which are also in Yosemite). Segments of the Merced Wild and Scenic River corridor are within congressionally designated Wilderness in Yosemite National Park.

WSRA specifies that both it and the Wilderness Act apply when a Wild and Scenic River is located in designated Wilderness:

> *"Any portion of a component of the National Wild and Scenic Rivers System that is within the National Wilderness Preservation System, as established by or pursuant to the Act of September 3, 1964 (78 Stat. 890; 16 U.S.C., ch. 23), shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply."*

The National Wilderness Preservation System was established by the Wilderness Act of 1964 (PL 88-577, 16 USC 1131-1136) to secure for present and future generations the benefits of an enduring resource of wilderness. The Wilderness Act requires that areas of designated Wilderness be managed in ways that preserve their wilderness character. A Wilderness area, as defined by the Act, is

> *"an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean… an area… retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable, and (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation."*

Congress has delegated the management of the Yosemite Wilderness to the NPS. The *NPS Management Policies* (2006) requires the superintendent of each park containing designated Wilderness resources to develop a wilderness management plan or equivalent planning document to guide the preservation, management, and use of these resources. The relationship between the *Final Merced River Plan/EIS* and the *Yosemite Wilderness Management Plan* is described below under "Interrelationships with Other Plans and Projects."

The NPS is required to consider the effects of commercial use in the Yosemite Wilderness as part of its delegated responsibility to maintain the wilderness character of the lands under its charge. A "Determination of Extent Necessary" for Commercial Services in the Wilderness components of the Merced Wild and Scenic River Corridor has been prepared for the *Final Merced River Plan/EIS* (see Appendix L).

National Environmental Policy Act

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA, [42 USC 4341 et seq.]), the NPS prepared and released a draft environmental impact statement in January 2013, identifying

and evaluating six alternatives (the No Action and five action alternatives). Regulations governing NEPA compliance are set by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). CEQ regulations establish the requirements and process for agencies to fulfill their obligations under the act. This final environmental impact statement has been completed in compliance with two fundamental NEPA requirements: 1) make a careful, complete, and analytical study, well before decisions are made, of the impacts of any proposal, and alternatives to that proposal, if it has the potential to affect the human environment, and 2) be diligent in involving interested or affected members of the public in the planning process.

Compliance with the National Historic Preservation Act (see below) is coordinated with the NEPA process, using NHPA criteria for the analysis of impacts on cultural resources. The NEPA process is also used to coordinate compliance with other federal laws and regulations applicable to the decisions to be made as part of the *Final Merced River Plan/EIS*, including but not limited to the following:

- Americans with Disabilities Act (42 USC 12101 et seq.)
- Clean Air Act (as amended, 42 USC 7401 et seq.)
- Clean Water Act (33 USC 1241 et seq.)
- Endangered Species Act (16 USC 1531 et seq.)
- Executive Order 11593: Protection and Enhancement of the Cultural Environment
- Executive Order 11988: Floodplain Management
- Executive Order 11990: Protection of Wetlands
- Wilderness Act

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA [16 USC 470]) directs federal agencies to take into account the effect of any undertaking (a federally funded or assisted project) on historic properties. A "historic property" is any district, building, structure, site, or object, including resources that are considered by American Indians or other communities to have cultural and religious significance, that is eligible for listing in the National Register of Historic Places (NRHP). Such properties have been found to be significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture. Section 106 also provides the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) an opportunity to comment on assessment of effects by the undertaking. Yosemite's Section 106 review process for the *Final Merced River Plan/EIS* is governed by national and park-specific programmatic agreements among the NPS, the Advisory Council for Historic Preservation, and the National Council of Historic Preservation Officers or the California state historic preservation officer (NPS, ACHP, and NCSHPO 2008; NPS, SHPO, and ACHP 1999). A full description of the consultation process for the *Final Merced River Plan/EIS* can be found in: "Consultation and Coordination" (Chapter 10) and Appendix J.

The Section 106 review process is also used to coordinate compliance with the following federal laws and regulations applicable to the decisions to be made as part of the *Final Merced River Plan/EIS*.

Archaeological Resources Protection Act

The Archeological Resources Protection Act of 1979 (ARPA [16 USC 470aa- 470ll]) prohibits unauthorized excavation of archeological sites on federal land, as well as other acts involving cultural resources, and implements a permitting process for excavation of archeological sites on federal or Indian lands (see regulations at 43 CFR 7). The act also provides civil and criminal penalties for removal of, or damage to, archeological and cultural resources. Historic properties are addressed in Volume 2, "Affected Environment and Environmental Consequences" (Chapter 9).

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA [25 USC 3001 et seq. and its implementing regulations at 43 CFR 10]) provides for the protection and repatriation of Native American human remains and cultural items and requires notification of the relevant Native American tribe upon accidental discovery of cultural items. Resources covered by NAGPRA are addressed in Volume 2, Chapter 9, and the process for handling these resources is included in the national and park-specific programmatic agreements.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1979 (AIRFA [42 USC 1996]) preserves for American Indians and other indigenous groups the right to express traditional religious practices, including access to sites under federal jurisdiction. Regulatory AIRFA guidance is lacking, although most land-managing federal agencies have developed internal procedures to comply with the act. Access to American Indian traditional religious practice sites is addressed in Cooperative Agreements between the National Park Service (Department of the Interior), Yosemite National Park and traditionally-associated American Indian tribes and groups.

Executive Order No. 13007: Indian Sacred Sites

Executive Order 13007 directs federal agencies with statutory or administrative responsibility for the management of federal lands, to the extent practicable and permitted by law, to accommodate access to and ceremonial use of Indian sacred sites by American Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Access to and ceremonial use of American Indian sacred sites is addressed in Cooperative Agreements between the National Park Service (Department of the Interior), Yosemite National Park and traditionally-associated American Indian tribes and groups.

1998 Concessions Management Improvement Act (Public Law 105-391)

In 1998, with the objective of improving concessions and increasing competition for contracts, Congress enacted the 1998 Concessions Management Improvement Act. Some of the major changes incorporated into the 1998 Act include reduced preferential right situations, franchise fee distribution changes, new competitive bid requirements, and increased accountability and oversight. The 1998 Act requires that contracts for visitor facilities and services "... be limited to those that are necessary and appropriate for public use and enjoyment..." of the national park area in which they are located "... and that are consistent to the highest practicable degree with the preservation and conservation of the areas." Title 36 of the Code of

Federal Regulations (36 CFR 51) outlines the requirements for the preservation of the parks and administration of commercial service operations. In Yosemite, several entities operate pursuant to concessions contracts, including the park's current primary concessioner, Delaware North, Inc.

Section 418 of the Concessions Management Improvement Act also allows the National Park Service to issue Commercial Use Authorizations for appropriate uses of park lands. Typical activities authorized under Commercial Use Authorizations include guided recreational trips and other guide services.

Legal History of the Merced River Plan

In 2009, the NPS settled a long-running lawsuit challenging the adequacy of the two prior versions of the Merced River Plan. This section summarizes the history of the lawsuit and the relevance of the *2009 Settlement Agreement* to the development of the 2013 Merced River Plan.

In August 2000, the NPS completed the first *Merced Wild and Scenic River Comprehensive Management Plan/Final Environmental Impact Statement* (*2000 Merced River Plan*). Two organizations—Friends of Yosemite Valley and Mariposans for the Environment and Responsible Government (formerly Mariposans for Environmentally Responsible Growth)—sued the NPS in the U.S. District Court for the Eastern District of California alleging that the *2000 Merced River Plan* violated both WSRA and NEPA. The district court ruled in favor of the NPS on most issues, and the two plaintiff organizations appealed the case to the U.S. Court of Appeals for the Ninth Circuit Court (Ninth Circuit Court). On appeal, the Ninth Circuit Court reversed the decision of the district court. Of particular importance, the Ninth Circuit Court found that the *2000 Merced River Plan* failed to adequately address user capacities. In its 2003 opinion, the Ninth Circuit Court stated that under WSRA, a comprehensive management plan must include "specific measurable limits on use" and that it must "deal with or discuss the maximum number of people that can be received" in a Wild and Scenic River corridor. The Ninth Circuit Court also found that the NPS had improperly drawn the boundary for the El Portal segment of the river.

In June 2005, the NPS prepared the *Merced Wild and Scenic River Revised Comprehensive Management Plan/Supplemental Environmental Impact Statement* (*2005 Revised Merced River Plan*) in response. Then, in November 2005, the same plaintiffs again challenged the *2005 Revised Merced River Plan* under WSRA and NEPA.

In 2006, the district court found that the *2005 Revised Merced River Plan* failed to address user capacity in accordance with the Ninth Circuit Court's 2003 opinion. The district court also concluded that the *2005 Revised Merced River Plan* failed to comply with NEPA because it was not prepared as a "self-contained" plan, it did not have a true No Action alternative, and it had an inadequate range of alternatives.

The NPS appealed the district court's ruling to the Ninth Circuit Court. In 2008, the Ninth Circuit Court issued an opinion upholding the district court ruling. The Ninth Circuit Court found that the *2005 Revised Merced River Plan* was "reactionary" because it did not describe an actual level of visitor use that will not adversely affect the ORVs of the Merced River. In the court's view, the *2005 Revised Merced River Plan*'s "Visitor Experience and Resource Protection" framework failed to satisfy the user capacity mandate of WSRA because the framework did not trigger management action before degradation occurred. The Ninth Circuit Court also held that the plan's interim visitor use limits were based on current capacities and that the NPS did not demonstrate how such limits would protect and enhance river values. Regarding NEPA, the court held that the range of actions in the alternatives was unreasonably narrow, that the plan should have

been prepared as a single, comprehensive document, and that the No Action alternative should not have included elements of the invalid *2000 Merced River Plan*.

In fall 2008, the NPS entered into mediation with the plaintiffs in an effort to resolve the litigation and agree upon a schedule for preparing the next version of the Merced River Plan. A court-mediated settlement agreement was executed September 29, 2009. The *2009 Settlement Agreement* directed that the Merced River Plan be completed by July 2013 (The settlement originally called for the plan to be completed by December 2012, but in 2011, the parties extended the deadline by six months. More recently, the settlement agreement was revised again to extend the deadline to March 31, 2014.). The settlement agreement provides that the NPS will prepare the plan with the assistance of designated user capacity experts and that there will be extensive, frequent, and robust public involvement in the development of the plan. The settlement agreement acknowledges that the new Merced River Plan may include both site-specific and programmatic elements. The NPS may also retain the boundaries, classifications, and Section 7 process from the *2005 Revised Merced River Plan*. However, the settlement agreement required NPS to develop revised outstandingly remarkable values and a revised user capacity program in accordance with applicable legal directives including the Ninth Circuit Court's opinions discussed above.

Until the new plan was completed, the settlement agreement limited the types of actions that the NPS could conduct in the river corridor. In general, the NPS could only undertake routine, intermittent and operational actions within the corridor. The NPS could not construct new roads, parking spaces, bridges, large structures, or overnight accommodations. The NPS also could not take actions that would pre-determine user capacity in any segment of the river.

Interrelationship with the 1980 Yosemite General Management Plan

The 1980 *Yosemite General Management Plan* (1980 GMP), as amended by the 1992 *Concession Services Plan*, is the overall management document for Yosemite National Park. The *Final Merced River Plan/EIS* amends the 1980 GMP regarding decisions within the river corridor in accordance with the 1987 legislation designating the Merced River as a Wild and Scenic River. Appendix A describes the amendments to the 1980 GMP proposed in the *Final Merced River Plan/EIS*.

The *Final Merced River Plan/EIS* reflects the overarching goals and objectives of the 1980 GMP. The NPS has implemented or partially implemented many actions called for in the 1980 GMP; these are considered elements of the No Action alternative described in "Alternatives" (Chapter 8).

Specific changes to the 1980 GMP as amended by the *Final Merced River Plan/EIS* can be found in Appendix A.

Relationship to Other Planning Documents

In addition to the complex legal framework of the *Final Merced River Plan/EIS*, the following Yosemite-specific plans are part of the planning framework.

- ***Concession Services Plan (1992).*** This plan supplements the 1980 *Yosemite General Management Plan*. Revisions to certain concession services action items of the General Management Plan are described, and the environmental consequences of those items are evaluated. The final plan reduced overall lodging, replaced lodging at Yosemite Lodge with economy cabins and cottages rather than motel units, retained 150 tent cabins at Curry Village, and increased food service seating, among other actions.

- ***Fire Management Plan* (2004*)***. This plan guides a complex fire management program, which oversees wildland fire suppression, wildland fire used to achieve natural and cultural resource benefits, fire prevention, prescribed fire, fire ecology research, and the use of mechanical methods to reduce and thin vegetation in and around communities. Actions prescribed in the *Fire Management Plan* will help achieve natural resource goals of the *Final Merced River Plan/EIS*.

- ***Scenic Vista Management Plan* (2010).** This plan describes a program to document, protect, reestablish, and maintain Yosemite's important viewpoints consistent with the natural processes and human influences that created them. The plan identifies viewpoints within the Merced River corridor. The *Final Merced River Plan/EIS* adopts these .

- ***Invasive Plant Management Plan Update* (2011).** This plan updates the *2008 Invasive Plant Management Plan* to create a more comprehensive and adaptive plan for protecting Yosemite's natural and cultural resources from non-native, invasive plants. This plan may be amended when the Tuolumne River and Merced River plans are completed.

- ***Ahwahnee Comprehensive Rehabilitation Plan* (2012).** This plan improves fire and seismic safety, operational efficiencies, and enhances visitor experience while protecting and preserving the historic integrity of this National Historic Landmark. Because The Ahwahnee is located within the Merced River corridor, the proposed rehabilitation actions for the Ahwahnee Comprehensive Rehabilitation Plan are deferred to future site-specific planning and design efforts following a Record of Decision for the *Final Merced River Plan/EIS*.

- ***Curry Village Rock-Fall Hazard Zone Structures Plan (2012).*** This plan re-aligns the boundary of the previous rock-fall hazard zone in Curry Village in response to recent scientific inquiry. To reduce rock-fall risk, the NPS closed or repurposed structures within the updated rock-fall hazard zone.

- ***Yosemite Wilderness Management Plan (1989).*** The Yosemite Wilderness was established by the California Wilderness Act of 1984. The Committee Report accompanying the 1984 act contains recommendations for managing Yosemite Wilderness regarding operational and environmental impacts. The *Yosemite Wilderness Management Plan* responded to those recommendations in addition to a number of objectives identified through condition reports and other research. The objectives of the *Yosemite Wilderness Management Plan* that pertain to the *Final Merced River Plan/EIS* regard: 1) Human-Induced Change: NPS will impose limits on human-induced change and will establish maximum use levels and quotas to accomplish this objective, 2) Wilderness Experience: Visitors can find a variety of wilderness experiences in keeping with traditional use patterns and select the degree of crowding, solitude, and human impact they wish to experience, 3) Wilderness Values: NPS will provide educational and interpretive media and programs to facilitate greater understanding and appreciation of wilderness values and to help visitors minimize resource impacts, and 4) Wilderness Facilities: Facilities, including safety railings, in Yosemite wilderness will be limited to those currently present or specifically proposed in this plan.

- ***Yosemite Wilderness Stewardship Plan* (in progress).** This plan is in the early stages of data collection, and public scoping has not commenced. Decisions made in the *Final Merced River Plan/EIS* regarding wild segments, river-related wilderness recreational values, facilities in potential wilderness additions, capacities, designated camping areas, the Merced Lake High Sierra Camp, and restoration activities may be revisited in the forthcoming Yosemite Wilderness Stewardship Plan, as part of a more comprehensive Wilderness planning effort. However, any revisions made in the forthcoming Wilderness Stewardship Plan to actions in the river corridor must be protective of river values and ensure that use levels in the corridor are consistent with the requirements of WSRA.

- ***Tuolumne Wild and Scenic River Comprehensive Management Plan* (in progress).** The NPS is preparing a comprehensive management plan for the Tuolumne River in Yosemite, designated as a Wild and Scenic River in 1984. The NPS expects the *Tuolumne Wild and Scenic River Final Comprehensive Management Plan/Environmental Impact Statement* to be released shortly after the *Final Merced River Plan/EIS*. While the two river corridors do not overlap, these two plans have a similar approach and organization.
- ***Restoration of the Mariposa Grove of Giant Sequoias* (in progress).** The Mariposa Grove of Giant Sequoias is located outside the Merced River corridor in the south portion of the park. Transportation facilities and public transit opportunities for visitors traveling through the area included in the *Final Merced River Plan/EIS* have been integrated into planning for the *Mariposa Grove FEIS*.
- ***Half Dome Trail Stewardship Plan* (2012).** The NPS will retain the Half Dome cable system and implement day-use limits through a permit system. While the project area for the *Half Dome Trail Stewardship Plan* is outside of the Merced River corridor, the use management prescribed for the Half Dome Trail may affect use patterns along trails located within Segment 1 of the Merced River corridor between Happy Isles and Little Yosemite Valley. The *Half Dome Trail Stewardship Plan* would be amended if the river plans determine that protection and enhancement of river values requires adjustments to the use of the Half Dome trail.
- ***Appendix B*** describes additional plans related to the *Final Merced River Plan/EIS*.

Comprehensive Wild and Scenic River Management Plan Requirements

WSRA and the Secretarial Guidelines direct managing agencies to develop a Comprehensive Wild and Scenic River Management Plan for each designated river. Table 2-1 displays the specific elements included in the *Final Merced River Plan/EIS* that encompass the Comprehensive Wild and Scenic River Management Plan requirements. These elements include those mandated in WSRA, the Secretarial Guidelines, and recommendations of the Interagency Wild and Scenic Rivers Coordinating Council (Interagency Council). The Interagency Council is not a decision-making body; rather, its goal is to improve interagency coordination in administering WSRA, improving service to the American public and enhancing protection of important river resources. The Interagency Council recommends inclusion of the following key components in a comprehensive river management plan (Interagency Council 2010):

- A description of resource conditions including detailed description of river values (free-flowing condition, water quality, and ORVs)
- Goals and desired conditions to protect a river's free-flowing condition, water quality, and ORVs
- Direction for visitor use and capacity management
- A framework for future development and activities on federal lands in the river corridor
- A monitoring strategy specifically related to protecting the river's free-flowing condition, water quality, and ORVs

TABLE 2-1: ELEMENTS OF THE COMPREHENSIVE WILD AND SCENIC RIVER MANAGEMENT PLAN

Objective	Primary Reference[1]	Chapter in the Merced River Plan/EIS
Document river boundaries and classify river segments as wild, scenic, or recreational	• Wild and Scenic Rivers Act (Section 3 [d]) • Secretarial Guidelines (Section II)	"Merced Wild and Scenic River Boundaries and Segment Classifications" (Chapter 3)
Provide a clear process for protection of the river's free-flowing condition in keeping with Section 7 of the Wild and Scenic Rivers Act	• Wild and Scenic Rivers Act (Section 7)	"Section 7 of the Wild and Scenic Rivers Act – Determination Process for Water Resources Projects" (Chapter 4)
Clearly describe the river's outstandingly remarkable values (ORVs), which are the unique, rare, or exemplary river-related characteristics that make the river eligible for inclusion in the National Wild and Scenic Rivers System	• Wild and Scenic Rivers Act (Section 3[d]) • Interagency Council (2010)	"River Values and Their Management" (Chapter 5)
Establish a management program to protect and enhance the river's outstandingly remarkable values, free-flowing condition, and water quality	• Wild and Scenic Rivers Act (Section 3[d]) • Secretarial Guidelines (Section III) • Interagency Council (2010)	"River Values and Their Management" (Chapter 5) "User Capacity" (Chapter 6) "Alternatives" (Chapter 8)
Determine the type and location of lands and facilities (both current and future) that provide for public use and enjoyment of the river resource while protecting and enhancing river values	• Wild and Scenic Rivers Act (Section 3[d]) • Secretarial Guidelines (Section III)	"River Values and Their Management" (Chapter 5) "Major Public Facilities" (Chapter 7) "Alternatives" (Chapter 8)
Address user capacities; determine the quantity and mixture of recreation types and other public uses that can be allowed without causing adverse effects or degradation of river values	• Wild and Scenic Rivers Act (Section 3[d]) • Secretarial Guidelines (Section III) • Interagency Council (2010)	"River Values and Their Management" (Chapter 5) "User Capacity" (Chapter 6) "Alternatives" (Chapter 8)

NOTE:

[1] Secretarial Guidelines – *National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas*; Interagency Council – Interagency Wild and Scenic Rivers Coordinating Council

IDENTIFICATION OF PLANNING ISSUES: PUBLIC AND INTERNAL SCOPING

The NPS sought input from the public, NPS staff, subject-matter experts, culturally-associated American Indian tribes and groups, and other federal, state, and local agencies as part of an extensive public planning process for the *Final Merced River Plan/EIS*. The NPS conducted project "scoping" to identify issues to be addressed during plan development.

During public scoping periods, the NPS collected written comments and conducted public workshops. The NPS considered 1,464 correspondences received since 2007 as part of this current planning process, as well as those received during earlier iterations of the Merced River Plan (see "Legal History" section in this chapter). Public workshops provided an opportunity for the public, the NPS planning team, and subject-matter experts to interact. Since 2007, the NPS has held approximately 40 Merced River Plan public workshops or webinars related to the development of the *Draft Merced River Plan/EIS*:

- 2007 Public Scoping (three public meetings or webinars)
- 2009 Public Scoping (10 public meetings or webinars)
- 2010 ORV Interim Public Comment Period (seven public meetings or webinars)

- 2011 Baseline Conditions Report Interim Public Comment Period (six public meetings or webinars)
- 2011 Alternative Development Workshop Interim Public Comment Period (six public meetings or webinars)
- 2012 Preliminary Alternative Concepts Workshops (six public meetings or webinars)

The NPS continued facilitating workshops throughout the development of the *Final Merced River Plan/EIS*. "Consultation and Coordination" (Chapter 10) includes a complete list of public meetings to-date and more detail on the plan's scoping process and the review and comment period on the draft plan.

Internal scoping—including consultation with culturally associated American Indian tribes and groups, other public agencies, and park staff— began with a comprehensive analysis of the river's outstandingly remarkable values and continued through development of the alternatives.

Issues and Opportunities to be Addressed in the Final Merced River Plan/EIS

The NPS analyzed public comments submitted in the period from 2007 to 2012 to assist with identification of issues and opportunities to be addressed in the *Final Merced River Plan/EIS*. Table 2-2 summarizes the information gathered during this period. The NPS integrated the issues, opportunities, and associated actions into a range of alternatives, as appropriate. In general, the *Final Merced River Plan/EIS* addresses issues that would protect and enhance river values, provides for public use and enjoyment of the river resource while protecting river values, establishes user capacities, and determines appropriate types and amounts of major public facilities necessary to support public use. Issues considered outside the scope of this plan are described in the "Issues Beyond the Scope and Direction of this Plan" section in this chapter.

TABLE 2-2: ISSUES IDENTIFIED IN PUBLIC SCOPING

General Planning Issues
General • The NPS should detail the specifics of project components, such as the types of campgrounds or the location of road alignments. • The NPS should conduct formal consultation on the draft Merced River Plan/EIS with American Indian tribes who claim traditional association with Yosemite National Park.
Actions to Protect and Enhance River Values
General Restoration • The NPS should prioritize protection and enhancement of resource-based river values over recreational values. • The NPS should not ecologically restore the Merced River corridor to a static snapshot but should protect a dynamic ecological system. • The NPS should consider the ecological impacts of removing facilities in the river corridor. • The NPS should use a 150-foot riparian buffer for all infrastructure, rather than the 100-year floodplain. **Biological** • The NPS should restore the ecological function of Yosemite Valley meadows. • The NPS should partially restore Yosemite Village Day-use Parking Area (Camp 6) to natural conditions. • The NPS should manage conifers in Yosemite Valley to restore views and the ecological function of meadows. • The NPS should examine the impacts of stock use on non-native plant dispersal, water quality, birds, native vegetation, and the visitor experience.

TABLE 2-2: ISSUES IDENTIFIED IN PUBLIC SCOPING

Actions to Protect and Enhance River Values (continued)
• The NPS should consider additional mitigation measures for continued use of stock animals. • The NPS should map critical habitat for recovery of special-status wildlife species and address actions to protect and enhance this habitat. • The NPS should remove parking at the El Portal Administrative Site from sensitive areas. • The NPS should designate river access points and direct visitor use to resilient beach locations. • The NPS should allow roadside parking on edges of meadows, with fencing to protect meadow resources. • The NPS should eliminate roadside parking from El Capitan Meadow to enhance views and protect the meadow.
Hydrology/Geology/Free-Flowing Condition/Water Quality
• The NPS should restore riverbanks by removing riprap and restoring riparian vegetation. • The NPS should alter or remove Sugar Pine, Ahwahnee, and Stoneman bridges to protect and enhance the free-flowing condition of the river. • The NPS should not remove the historic bridges as they provide opportunities for scenic viewing that is protective of other river values. • The NPS should consider the use of holding panels to protect bridges and river flow with openings, arches, or culverts to accommodate high flow without causing additional impacts to free-flowing condition. • The NPS should reduce the number of units at Housekeeping Camp to protect the river. • The NPS should remove or relocate campsites that are too close to the river, so as to protect riparian habitat. • The NPS should consider the full effects of adding remote parking in El Portal, including the impact on the river. • The NPS should remove unnecessary, abandoned, or inappropriate infrastructure, such as the Greenemeyer sand pit, and allow site restoration.
Scenic and Cultural Resources
• The NPS should identify goals, measurable objectives, and management prescriptions that explain specifically how the agency will define, protect, and enhance the Cultural Outstandingly Remarkable Value (ORV). • The NPS should retain historic bridges due to their important cultural value and their ability to provide for traffic flow on peak days in Yosemite Valley. • The NPS should adequately define and collaboratively monitor the ethnographic component of the Cultural ORV in Yosemite Valley. • The NPS should protect and enhance traditional cultural resources (including archeological sites, scenic resources, and natural resources with traditional cultural uses) that represent a continuum of cultural heritage connecting contemporary people to the archeological sites of their ancestors in the park. • The NPS should consider removing the abandoned sewage treatment plant at El Portal but take measures to protect the prehistoric burials in the area and consult with traditionally associated American Indians. • The NPS should protect archeological resources by removing infrastructure and visitor uses from sensitive areas.
User Capacity, Land Use and Facilities Management
Facilities and Services
• The NPS should clearly explain the process for analyzing major facilities in the river corridor. • The NPS should remove/relocate obsolete or unnecessary infrastructure. • The NPS should not reduce facilities with the assumption that the removal benefits the majority of people. • The NPS should first identify appropriate visitor facilities and services necessary for the protection and enhancement of ORVs before determining transportation, user capacity, and parking requirements. • The NPS should not remove, relocate, or re-design facilities, services, or activities that do not have a direct or indirect adverse effect on river values. • The NPS should establish a limit for or reduce the amount of rafts on the river. • The NPS should allow year-round paddling on all sections of the Merced River, including the South Fork. • The NPS should provide more picnic areas in developed areas of the park.

TABLE 2-2: ISSUES IDENTIFIED IN PUBLIC SCOPING

User Capacity, Land Use and Facilities Management (continued)
• The NPS should end use of commercial day rides within Yosemite Valley and close the commercial stables. • The NPS should address hiker-stock conflicts on trails. • The NPS should continue to allow horseback riding in the Merced River corridor. • The NPS should continue stock support for trail maintenance. • The NPS should maintain the Wawona Impoundment to supply water to the Wawona community. • The NPS should consider development of camping, housing, and parking in El Portal. • The NPS should consider moving administrative offices out of Yosemite Valley to El Portal or Mariposa. • The NPS should locate the concessioner general offices and the NPS administrative offices together, whether in Yosemite Valley, El Portal, or Mariposa, to maximize collaboration. • The NPS should not remove the Curry Village ice rink, Happy Isles snack stand, or Yosemite Lodge and Ahwahnee pools. • The NPS should not consider construction of administrative facilities in Section 35 in Wawona. • The NPS should improve access for people with disabilities.
Visitor Overnight Services (Campgrounds and Lodging) • The NPS should maintain or increase the number of campsites in Yosemite Valley. • The NPS should develop, increase, and improve high-density walk-in camping, such as Camp 4, to reduce the sprawling nature of traditional campgrounds and their associated impacts to the natural landscape. • The NPS should not decrease the capacity of Yosemite Valley's Backpackers Campground. • The NPS should segregate camping by type (RV, tent, and walk-in campgrounds) to support each person's camping experience to the fullest. • The NPS should reduce campsites within the park and not rebuild those lost in the 1997 flood. • The NPS should not develop additional campgrounds west of Yosemite Lodge in Yosemite Valley. • The NPS should restore Upper and Lower River Campgrounds to natural conditions. • The NPS should replace the concessioner stables area in Yosemite Valley with additional camping. • The NPS should consider developing more group campgrounds in Yosemite Valley. • The NPS should increase camping and decrease lodging to improve access for lower-income families and to reduce operational needs. • The NPS should not remove Yosemite Lodge or re-purpose the area as camping because it provides a mid-priced lodging opportunity. • The NPS should not reduce visitor lodging capacity in the park due to the loss of transient occupancy taxes for Mariposa County. • The NPS should reduce or remove the High Sierra Camps and restore the sites. • The NPS should retain the High Sierra Camps at their current capacity. • The Merced Lake High Sierra Camp should be managed to protect its historic value.
Housing • The NPS should remove employee housing complexes that are at risk from rock falls. • The NPS should consider negative impacts on El Portal's limited infrastructure, services, and community atmosphere before building high-density housing for concession employees.
Transportation • The NPS should articulate how current and proposed transportation strategies affect ORVs. • The NPS should support private vehicle access to Yosemite Valley because it is more sustainable than out-of-park public transportation. • The NPS should encourage alternative transportation. • The NPS should not switch to a shuttle-only transportation system.

TABLE 2-2: ISSUES IDENTIFIED IN PUBLIC SCOPING

User Capacity, Land Use and Facilities Management (continued)
• The NPS should implement a system to allow pedestrians to cross the road safely and not impede traffic. • The NPS should construct pedestrian underpasses and roundabouts to improve traffic flow in Yosemite Valley. • The NPS should not construct pedestrian underpasses or roundabouts. • The NPS should consider an East Yosemite Valley day-use parking permit system. • The NPS should use other transportation management tools before using a day-use parking permit system. • The NPS should develop parking in West Yosemite Valley. • The NPS should use real-time data to educate the visitor on the number of private vehicles allowed on a daily basis during the summer peak period. • The NPS should expand shuttle service between Wawona and other park locations. • The NPS should provide areas other than the Wawona Store for buses to park. • The NPS should develop remote parking lots outside of Yosemite Valley. • The NPS should develop additional employee parking at the El Portal Warehouse.
Visitor Experience and User Capacity • The NPS should clearly define how user capacity will be determined. • The NPS should consider the impact of seasonal and location differences when evaluating user capacity. • The NPS should enforce user capacity to enhance the visitor experience and effectively protect resources. • The NPS should consider the socioeconomic impact of user capacity on surrounding gateway communities. • The NPS should establish a monitoring plan to ensure the effectiveness of use limits. • The NPS should maximize the use of the Merced River corridor as a recreational attraction and enable full accommodation of increased levels and intensities of visitor use. • The NPS should regulate access to sensitive areas within the park. • The NPS should not limit access to the park. • The NPS should establish user capacity based on vehicles rather than individual park visitors. • The NPS should not increase visitation because this would adversely affect the Recreational ORV due to additional crowding and congestion at specific visitor-use areas. • The NPS should address how day use in Wilderness areas affects encounter rates and impacts to wilderness character. • The NPS should reduce the trailhead quotas for Wilderness areas to improve the wilderness experience.

Issues beyond the Scope and Direction of this Plan

This section describes the issues raised during public scoping and workshops that the NPS considered beyond the scope of this plan. "Alternatives" (Chapter 8) describes additional actions that were considered but dismissed in the plan. The NPS removed issues from consideration if they were:

- Already decided by law, regulation, or other higher-level decisions
- Not relevant to the decision to be made
- Missing a valid cause-and-effect relationship
- Associated with small effects relative to the decision to be made
- Conjectural and not supported by scientific or factual evidence
- Unreasonable or infeasible because they would be cost-prohibitive, violate law or policy, or contribute to other resource concerns or hazards

The following issues were considered beyond the scope of the plan:

TABLE 2-3: ISSUES IDENTIFIED IN PUBLIC SCOPING BEYOND THE SCOPE OF THE MERCED RIVER PLAN/EIS

Actions to Protect and Enhance River Values
• The NPS should design "smokeless campsites" with no fire rings in a portion of all Valley campgrounds to enhance the visitor experience for people with aversions to campfire smoke. • The NPS should develop seasonal campgrounds in areas that are known to flood annually. • The NPS should increase development in Wilderness areas. • The NPS should change the Wilderness boundaries within Yosemite.
User Capacity, Land Use and Facilities Management
Facilities and Services • The NPS should develop more trails and other recreation opportunities throughout the park to disperse visitor use. • The NPS should not remove facilities, such as the Wawona Golf Course, if they are located outside the WSRA corridor and the 100-year floodplain. • The NPS should encourage bicycle use through a non-profit bicycle exchange or NPS operation offering reasonable prices. • The NPS should not issue special-use permits for large, private events. **Visitor Overnight Services (Campgrounds and Lodging)** • The NPS should develop additional campgrounds outside of the river corridor. • The NPS should implement a tiered camping fee structure for its premium campsites. **Transportation** • The NPS should construct a remote parking area and visitor center in Foresta. • The NPS should increase the frequency and expand shuttle service between Yosemite Valley, Glacier Point, and Mariposa Grove. • The NPS should partner with local communities to develop remote transit centers and expanded public transportation. **Visitor Experience and User Capacity** • The NPS should manage permit and reservation systems that cannot be abused by speculative buyers and scalping. • The NPS should encourage the use of the larger Sierra Nevada environment surrounding Yosemite. • The NPS should address recreational opportunities that are accessed from the Merced River corridor but do not necessarily occur in the river corridor, such as climbing.

3. MERCED WILD AND SCENIC RIVER BOUNDARIES AND SEGMENT CLASSIFICATIONS

RIVER CORRIDOR BOUNDARIES

The Wild and Scenic Rivers Act (WSRA) requires federal agencies to establish river corridor boundaries for each federally administered river in the National Wild and Scenic Rivers System. In accordance with WSRA (Section 3[b]), boundaries may include an average of not more than 320 acres of land per mile, measured from the ordinary high-water mark on both sides of the river.[1] The National Park Service (NPS) used U.S. Geological Survey 7.5-inch topographic quadrangle data to calculate a Wild and Scenic River corridor boundary that encompasses all land within a quarter-mile of the ordinary high-water mark of the Merced River, the maximum area allowed under WSRA.[2] This includes the land below the ordinary high-water mark, which is not included in the acreage limitation. The NPS applies this boundary consistently to the Merced River in Yosemite National Park and the El Portal Administrative Site, including the main stem Merced River, South Fork Merced River, Red Peak Fork, Merced Peak Fork, Triple Peak Fork, and Lyell Fork tributaries.

The NPS has presented and refined the boundaries and classifications of the Merced Wild and Scenic River throughout the legal and planning history of the Merced Wild and Scenic River. In 2003, the U.S. Court of Appeals for the Ninth Circuit ruled that the 2000 *Merced Wild and Scenic River Comprehensive Management Plan/Final Environmental Impact Statement* was deficient with regard to the river boundary in the El Portal segment, which was delineated as the 100-year floodplain along with adjacent wetlands, or a 100-foot buffer from the ordinary high-water mark, whichever was greater. The court found that this river corridor did not fully account for the location of river values in the area and directed the NPS to "reevaluate the river corridor boundary based on the precise location of outstandingly remarkable values."

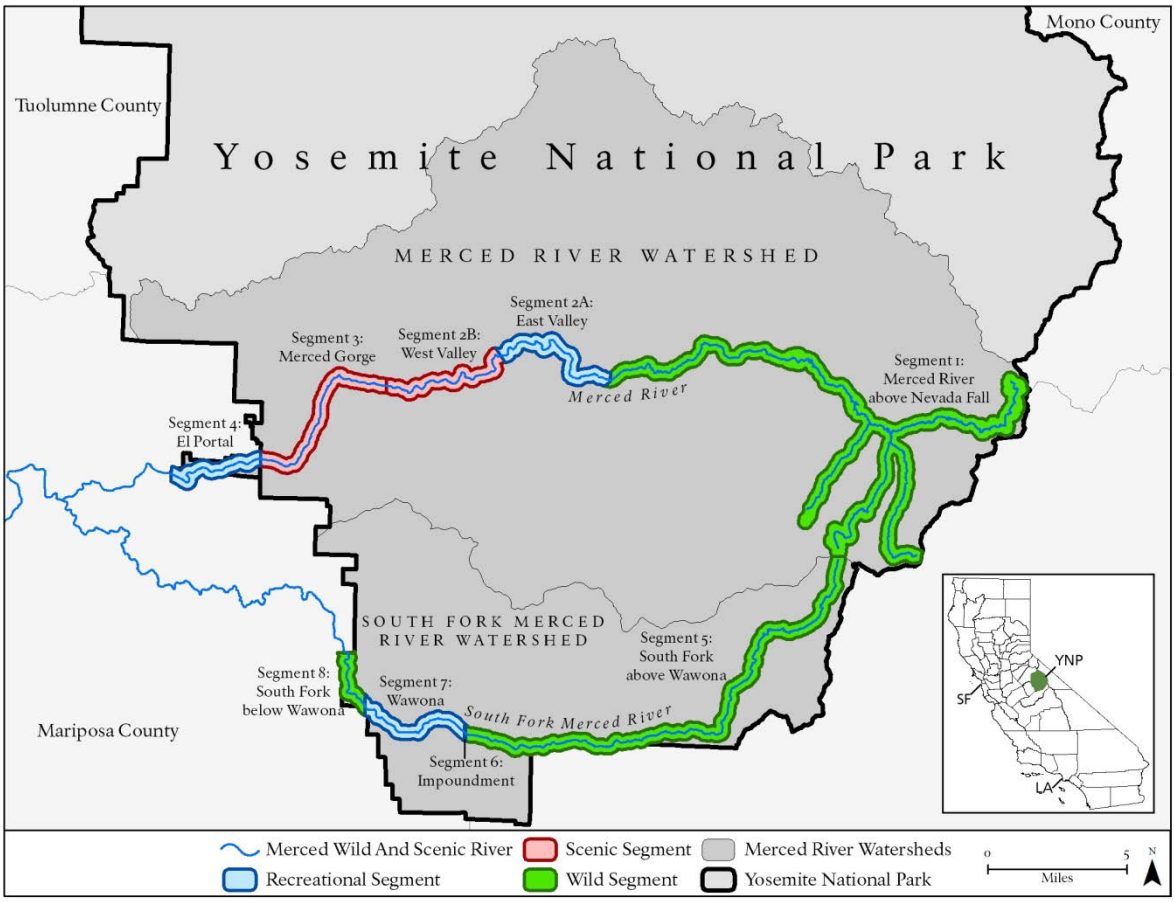
The 2005 *Merced Wild and Scenic River Comprehensive Management Plan/Final Environmental Impact Statement* revised the corridor boundary in El Portal to include all land within a quarter-mile of each side of the river, consistent with the rest of the river corridor. This *Final Merced River Plan/EIS* establishes the same river corridor boundary for the Merced Wild and Scenic River: a quarter-mile of land measured from each side of the river's ordinary high-water mark throughout all segments of the river (Figure 3-1). This action is common to all action alternatives included in this plan.

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1 The U.S. Army Corps of Engineers defines the ordinary high water mark as " that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

2 This acreage designation does not limit the protection of river values, which must be protected whether they are inside or outside the corridor boundary.

Figure 3-1: Merced Wild and Scenic River Segment Boundaries and Classifications



WILD AND SCENIC RIVER CLASSIFICATIONS

WSRA (Section 2 [b]) directs managing agencies to classify and administer designated rivers as one of the following, depending on the type and intensity of development existing at the time of designation:

> ***Wild:*** Rivers or sections of rivers that are free of impoundment and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and water unpolluted. These represent vestiges of primitive America.
>
> ***Scenic:*** Rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
>
> ***Recreational:*** Rivers or sections of rivers readily accessible by road or railroad, that may have some development along their shorelines, and may have undergone some impoundment or diversion in the past.

These definitions provide important guidance on the type and intensity of development that is allowable in river segments, depending upon the segment's classification.[3] As is evident, the Act and the Guidelines describe development that may exist in the river areas in terms of a continuum, with the least amount of

[3] 16 U.S.C. Section 1273(b).

development tolerated in wild segments. "Wild" segments are to be managed as "vestiges of primitive America," containing little or no evidence of human activity, although a few inconspicuous structures are permissible. These areas generally do not contain roads and are free of impoundments. "Scenic" river segments may contain more discernible development. A scenic segment retains its overall natural character but may have structures or concentrations of structures in short reaches of the total area. Scenic segments may be accessible in places by roads. Finally, "recreational" segments, such as East Yosemite Valley, are defined as being readily accessible by road and may have roads paralleling the river on one or both banks as well as bridge crossings. Recreational segments may also have some residential, commercial or similar development, and may have evidence of impoundment or diversion.[4]

Although each classification permits some existing nonconforming development to remain, "the criteria do not imply that additional inconsistent development is permitted in the future."[5]

According to WSRA requirements, this plan divides the Merced River into segments and classifies each segment as wild, scenic, or recreational as portrayed in Figure 3-1 and Table 3-1. This classification system is common to all alternatives proposed in this plan. If the NPS removes the Wawona Impoundment from the river channel at some time in the future, Segment 6 would be reclassified as scenic, based on a reduced level of development and the associated enhancement to the river's free-flowing condition.

The classification of a river segment provides a general framework for the type and intensity of land management activities that may take place in the future (IWSRCC 2002). A comprehensive management plan may allow different levels of use and development based on how a segment is classified. The classifications of each river segment guide the range of actions proposed in this plan. All proposed actions were analyzed to ensure they are compatible with the classification for each river segment.

Merced River Classifications vs. ORVs

Throughout the *Final Merced River Plan/EIS*, references are made to river classifications, as discussed here, and to outstandingly remarkable values (ORVs), as discussed in Chapter 5.

The *Final Merced River Plan/EIS* has both "scenic" river classifications and Scenic outstandingly remarkable values (ORVs). A scenic river classification refers to a river, or segment of a river, that is free of impoundments, with shorelines or watersheds still largely primitive, and shorelines largely undeveloped but accessible in places by roads. A Scenic ORV, however, refers to the rare and exemplary river-related scenery that warrants special protection for the benefit and enjoyment of present and future generations. For example, the Merced Gorge (Segment 3) is classified as a scenic segment, and there is also a Scenic ORV in this segment.

Similarly, references are made to "recreational" river classifications and Recreational ORVs. A river, or segment of a river, that is classified as a recreational segment is readily accessible by road or railroad, may have some development along the shorelines, and may have had some impoundment or diversion in the past. A Recreational ORV refers to the rare and exemplary, river-related recreational opportunities that warrant special protection. For example, Yosemite Valley (Segment 2) is classified as a recreational segment, and there is also a Recreational ORV in this segment.

4 47 Fed. Reg. 39457-58.
5 47 Fed. Reg. at 39456-57.

TABLE 3-1: SEGMENT CLASSIFICATIONS FOR THE MERCED WILD AND SCENIC RIVER

Segment	Classification	Location	Justification
1	Wild	Merced River Above Nevada Fall	This segment is in designated Wilderness, with exceptional water quality and no impoundments. Access is only by trail, with minimal structures present (trail bridges, the Merced Lake High Sierra Camp, and the Merced Lake Ranger Station). This segment is a vestige of primitive America.
2A	Recreational	East Yosemite Valley: Top of Nevada Fall to Sentinel Beach	This segment is readily accessible by roads, trails, and bike trails, with exceptional water quality and no impoundments. Recreational infrastructure is present, including lodges, campgrounds, administrative facilities, and other developments typical of a heavily-visited destination.
2B	Scenic	West Yosemite Valley: Sentinel Beach to junction of El Portal Road and Big Oak Flat Road	This segment is free of impoundments and has exceptional water quality, with its shorelines largely primitive and undeveloped (only picnic areas, parking lots, and some restrooms are present). Roads parallel the river on both sides.
3	Scenic	Merced Gorge: Junction of El Portal and Big Oak Flat Roads to western Yosemite National Park boundary at Parkline	This segment is free of impoundments and has exceptional water quality, with its shorelines largely primitive and undeveloped (only a picnic area, some small parking lots, some restrooms, and the Arch Rock Entrance Station are present). A road parallels the river on its north bank.
4	Recreational	El Portal: Western Yosemite National Park boundary at Parkline to El Portal Administrative Site boundary	This segment is readily accessible by road with exceptional water quality and no impoundments. Administrative infrastructure is present, typical of a national park headquarters area.
5	Wild	South Fork Merced River Above Wawona: Headwaters to top of pool at Wawona Impoundment	This segment is in designated Wilderness, with exceptional water quality and no impoundments. Access is only by trail, with no structures present. This segment is a vestige of primitive America.
6	Recreational	Wawona Impoundment: Top of pool at Wawona Impoundment to 200 feet below dam	This small segment is readily accessible by road and has a small, historic impoundment and exceptional water quality.
7	Recreational	Wawona: 200 feet below Wawona Impoundment to Squirrel Creek	This segment is readily accessible by road and trail with exceptional water quality and no impoundments. Recreational infrastructure is present, including a lodge, a campground, administrative facilities, and other developments typical of a popular visitor destination.
8	Wild	South Fork Merced River Below Wawona: Squirrel Creek to western park boundary	This segment is managed to provide primitive recreational opportunities, with exceptional water quality and no impoundments. No trails or structures are present. This segment is a vestige of primitive America.

4. DETERMINATION PROCESS FOR WATER RESOURCES PROJECTS

The U.S. Congress enacted the Wild and Scenic Rivers Act (WSRA) in 1968 to end decades of damming, dredging, and diversion of some of the nation's most spectacular waterways. Section 7 is a key provision of WSRA that restricts water resources projects, or those that are within the bed and banks of the Merced River or affect the river's free-flowing condition. Section 7 requires a rigorous and consistent interagency process for protecting river resources. This chapter describes the process used to protect the free-flowing condition of the Merced River when a proposed a water resources project triggers a review and determination under Section 7 of WSRA. Water resources projects include, but are not limited to, dams, water diversion projects, fisheries habitat and watershed restoration/enhancement projects, bridge and other roadway construction/reconstruction projects, bank stabilization projects, channelization projects, levee construction, recreation facilities such as boat ramps and fishing piers, and activities that require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers.[1]

While no new dams will be proposed on the Merced River in the future due to its status as a Wild and Scenic River, other potential water resources projects along the Merced Wild and Scenic River could be proposed, including projects with the purpose of enhancing the hydrological/geological processes and the biological values of the river. The National Park Service (NPS) will conduct a "Section 7 Determination Process" as described in the next section of this chapter for all proposed projects that require review under Section 7 of WSRA. Any proposed project that meets the following conditions must undergo an initial review, as depicted in Table 4-1, to confirm whether the proposed project is subject to the Section 7 Determination process:

- Proposed projects in the bed or banks of the Merced River, or
- Proposed projects in the bed or banks of a tributary to the main stems of the Merced River

The next section in this chapter describes the "Section 7 Determination Process."

The NPS will conduct a Section 7 Determination for the Selected Action and present the results as an appendix to the Record of Decision for the plan (Appendix T).

THE SECTION 7 DETERMINATION PROCESS

Any federally assisted water resources project that would have a "direct and adverse effect" on the values for which a river was added to the Wild and Scenic Rivers System is prohibited. The NPS is responsible for making the final determination as to whether a proposed water resources project would have a direct and adverse impact on river values in the portion of the Merced River within Yosemite National Park and the El Portal Administrative Site. The NPS must coordinate the Section 7 Determination process with other agencies that are required to review and comment on the project. Depending on the type and location of the

[1] Section 404 of the Clean Water Act requires that a permit is obtained from the U.S. Army Corps of Engineers, prior to beginning any non-exempt activity involving the placement of dredged or fill material in waters of the e United States, including wetlands.

project, such agencies might include the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the U.S. Forest Service, the Bureau of Land Management, and the U.S. Army Corps of Engineers. Review of projects subject to a Section 7 Determination will be coordinated with other environmental review processes such as those required under the National Environmental Policy Act. In accordance with WSRA, potential water resources projects that could have a direct and adverse impact on the values of a designated river must be: (1) redesigned and resubmitted for a subsequent Section 7 Determination, (2) abandoned, or (3) reported to the Secretary of the Interior and Congress.

TABLE 4-1: DETERMINING THE NEED FOR A SECTION 7 DETERMINATION UNDER WSRA

When is a Determination under Section 7 of the Wild and Scenic Rivers Act Required?	
IF • The project is proposed in the bed or banks of a designated river or congressionally authorized study river **AND** • The project is proposed by a federal agency or it requires some type of federal assistance such as a permit, license, grant, or loan **THEN** **A Section 7 Determination is required when both of the above conditions exist.**	**IF** • The project is proposed in the bed or banks of tributary to a designated river or congressionally authorized study river **AND** • The project is proposed by a federal agency or it requires some type of federal assistance such as a permit, license, grant, or loan **AND** • The project is likely to result in effects within a designated river or congressionally authorized study river **THEN** **A Section 7 Determination is required when all of the above conditions exist.**

Federal Projects within the Bed and Banks of Tributaries to a Wild and Scenic River

Proposed non-hydroelectric projects with federal assistance that would take place within the bed and banks of tributaries to Wild and Scenic Rivers have a slightly different evaluation standard than projects proposed directly in the bed and banks of a Wild and Scenic River. These projects must not "invade the area or unreasonably diminish" Wild and Scenic River values.

Steps in the Wild and Scenic Rivers Act Section 7 Determination Process

The following WSRA Section 7 Determination process is adapted from a technical report by the Interagency Council (IWSRCC 2004). In conformance with the guidance contained in that report, the NPS will undertake the following steps as part of its Section 7 Determination process for non-emergency projects:

- Describe the purpose and need for the proposed project and its location, duration, magnitude, and relationship to past and future management activities.

- Analyze the potential impacts of the proposed project on the values for which the river was designated Wild and Scenic. This analysis will follow the guidelines provided by the *Wild and Scenic Rivers Act, Section 7 Technical Report* of the Interagency Council (2004), and other applicable guidance.
- Define the likely duration of the projected impacts.
- Use this analysis to make a WSRA Section 7 Determination. This determination will document the effects of the proposed activity, including any direct and adverse effects on the values for which the river was designated Wild and Scenic.
- Redesign and resubmit any water resources projects found to have a direct and adverse impact on the values of this designated river for a subsequent Section 7 Determination. In the event that a project cannot be redesigned to avoid direct and adverse impacts on the values for which the river was designated, the NPS will either abandon the project or advise the Secretary of the Interior in writing and report to Congress in writing in accordance with WSRA Section 7(a).
- Follow WSRA Section 7 procedures to determine if projects within the bed and banks of a tributary would invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the designated corridor.

Emergency projects, such as repairing a broken sewer line in or near the river, may temporarily proceed without a Section 7 Determination. However, a Section 7 Determination must be completed in a timely manner upon completion of the project. Emergency water resources projects that are later determined to have a direct and adverse impact on the river values shall be mitigated based on the findings of the Section 7 determination.

Flowcharts to Illustrate WSRA Section 7 Determination Process

The Interagency Council's *Wild and Scenic Rivers Act: Section 7 Technical Report* (IWSRCC 2004) suggests procedures to evaluate the effects of proposed water resources projects. The Interagency Council website also includes examples of Section 7 Determinations for common types of water resources projects.[2] The Interagency Council developed three flowcharts to guide managers in determining whether a proposal is subject to review under Section 7(a) and, if so, which standard and evaluative procedure applies. These flowcharts, as illustrated in Figure 4-1, Figure 4-2 and Figure 4-3 also reference the appropriate detailed evaluative process in the Interagency Council's Section 7 technical report. The flowcharts would be the basis of the Section 7 Determination process for the *Merced River Plan Record of Decision*.

Using the flowcharts, managers would follow the track for proposed water resources projects located either *within* the Merced River corridor or *outside* (upstream, downstream, or on a tributary to) the Merced River corridor (Figure 4-1). Figure 4-2 and Figure 4-3 provide a more detailed explanation of the process. Figure 4-2 can be used for water resources projects that would be located within a designated river corridor, and Figure 4-3 can be used for water resources projects that would be located outside a designated river corridor.

[2] http://www.rivers.gov/rivers/documents/section7/flowchart-introduction.pdf

Figure 4-1: Wild and Scenic Rivers Act Section 7 Determination Process Flowchart

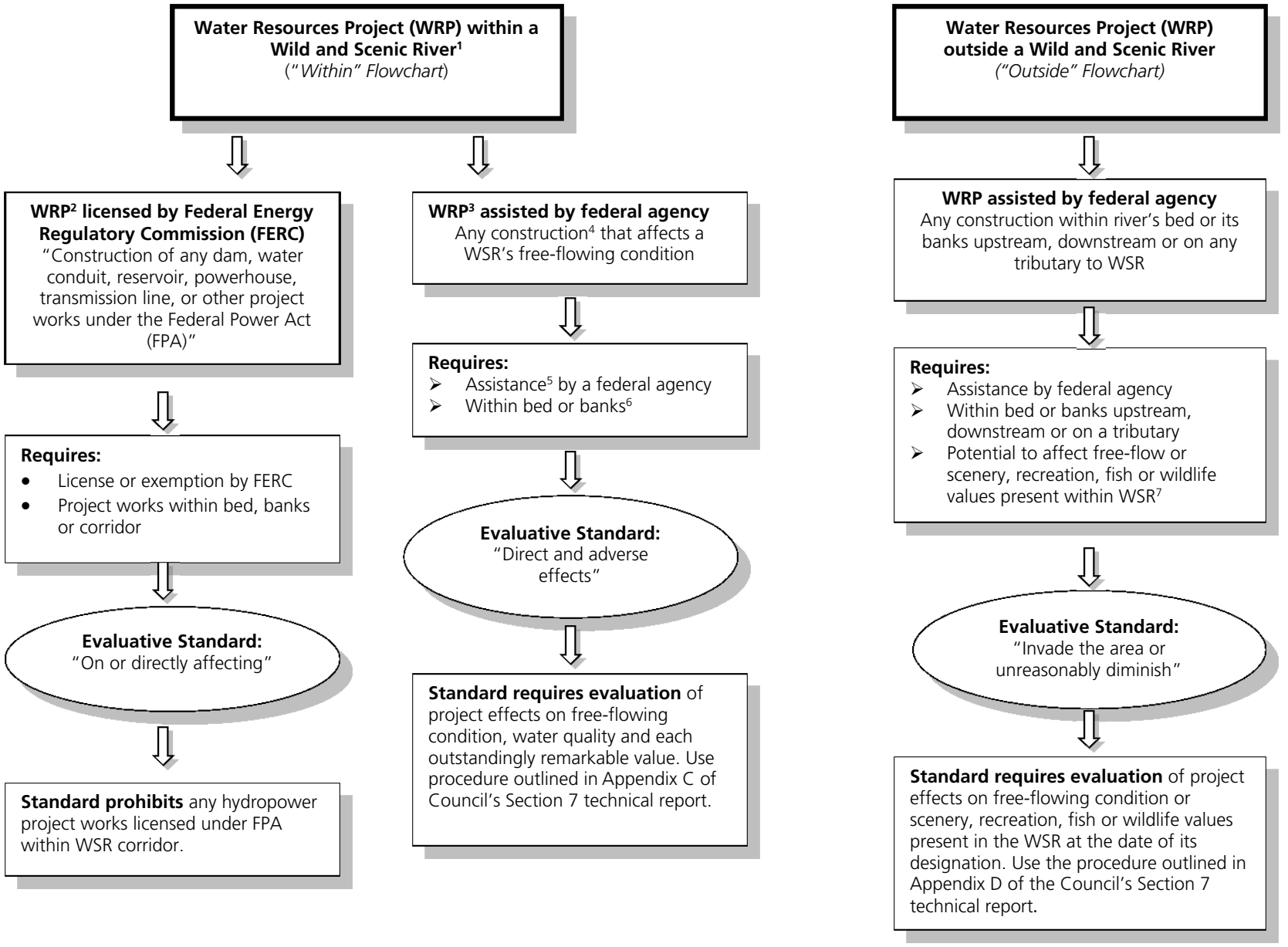


Figure 4-2: Section 7 Determination: Flowchart for a Water Resources Project Within a Wild and Scenic River Corridor[1]

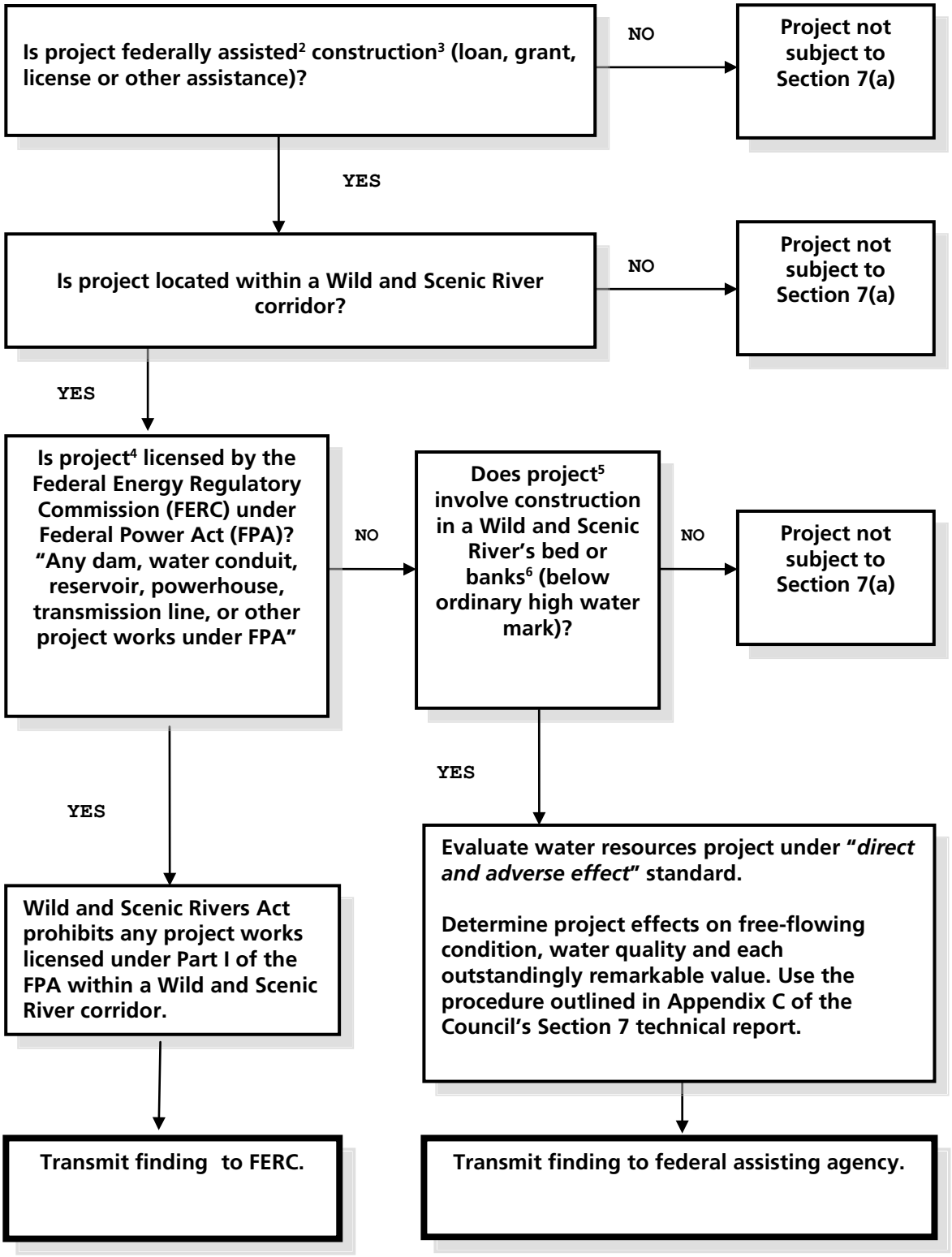
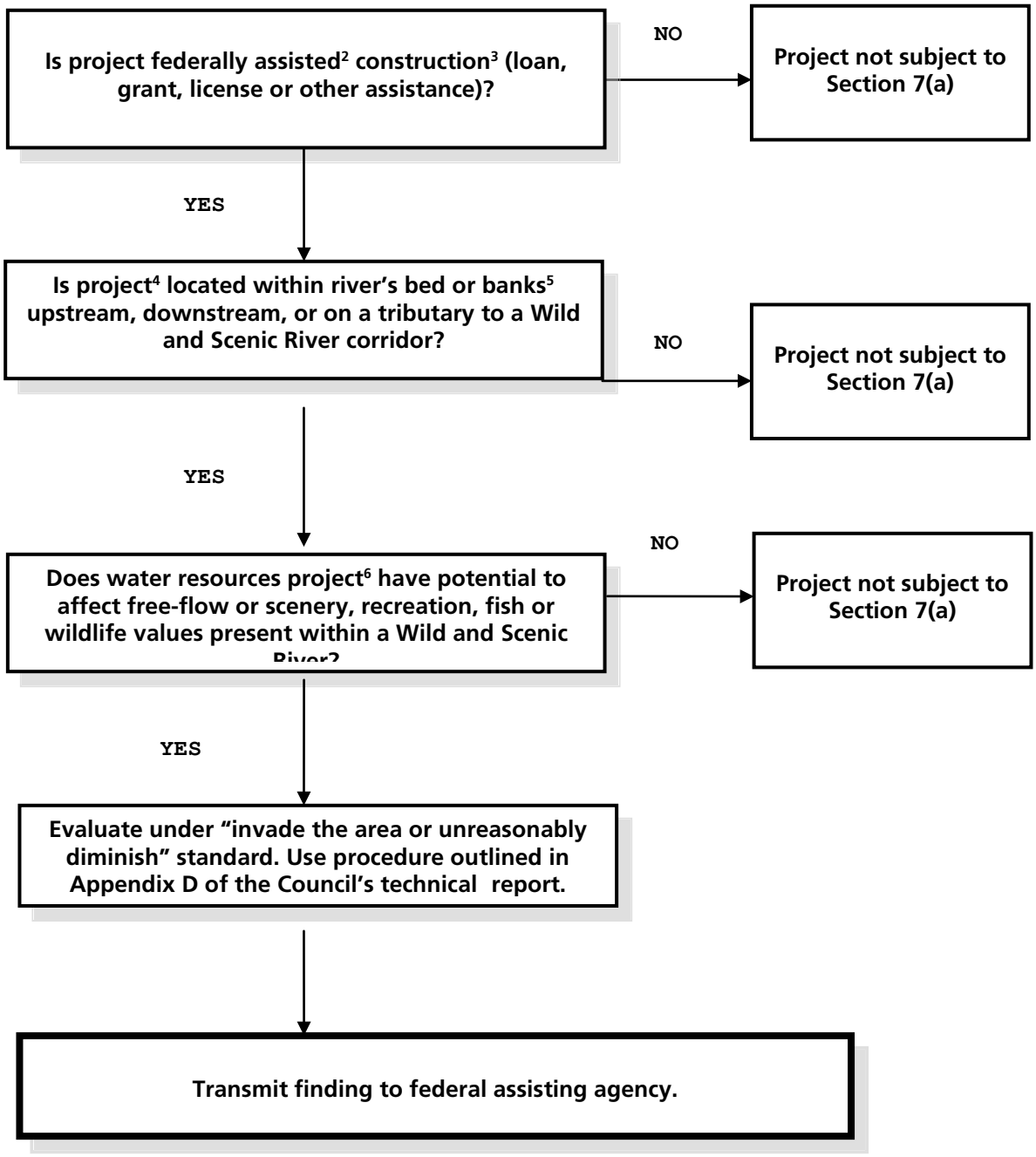


Figure 4-3: Section 7(a) Flowchart for a Water Resources Project Outside of a Wild and Scenic River Corridor



FLOWCHART FOOTNOTES (For Figure 4-2 and Figure 4-3)

[1] **A Wild and Scenic River** includes the river channel and adjacent areas within the Wild and Scenic River boundaries pursuant to Section 3(a) or 2(a) (ii) of WSRA.

[2] **A water resources project** (i.e., a hydropower project licensed under the Federal Energy Regulatory Commission) refers to construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project work under the hydropower provisions (license and exemption) of the Federal Power Act (Part I), as amended (41 Stat. 1063; 16 USC 791a et seq.). Other facilities licensed by the Federal Energy Regulatory Commission under the Federal Power Act (e.g., interstate power transmission lines or natural gas pipelines) are not prohibited outright. They are subject to review under Section 7(a) only if they include construction as described in Footnote 6.

[3] **A water resources project** is federally assisted construction that would affect a designated river's free-flowing characteristics, as defined in Section 16(b) of WSRA (see footnote 6). Examples of water resources projects include, but are not limited to: fisheries habitat and watershed restoration/enhancement projects; water diversion projects; transmission lines and pipelines; bridge and other roadway construction/reconstruction projects; dams; water conduits; bank stabilization projects; channelization projects; powerhouses; levee construction; reservoirs; recreation facilities such as boat ramps or fishing piers; or dredge and fill projects that require a federal permit, such as from the U.S. Army Corps of Engineers as required by Section 404 of the Clean Water Act (33 USC 1344).

[4] **Construction** refers to any action carried out with federal assistance that would affect the free-flowing characteristics of a Wild and Scenic River.

[5] **Assistance** refers to any loan, grant, license, or other assistance in the construction of any water resources project.

[6] **Bed or banks** is limited to the area within the ordinary high-water mark of the river. The ordinary high-water mark is defined in 33 CFR Part 328.3(e) as "…that line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

[7] Requires a **nexus** between the proposed tributary project and the Wild and Scenic River or such project is not a water resources project for purposes of a Section 7 Determination. Projects that have the potential to affect the river's free-flowing condition or the scenery, recreation, fish, or wildlife values of a Wild and Scenic River are dams, upstream diversion structures, and projects that can be seen from the Wild and Scenic River, as they have the potential to affect these characteristics and values in the designated river.

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5. RIVER VALUES AND THEIR MANAGEMENT

This chapter begins with a brief orientation to the river values identified for the Merced Wild and Scenic River, and the concepts of management standard, adverse impact, and degradation integral to protection. The bulk of the chapter discusses each river value in detail, including a summary of its current condition, associated management concerns and specific actions to protect the river value, and the monitoring program the National Park Service (NPS) will use to protect river values from adverse impact or degradation in the future. The monitoring program described in this chapter and the associated actions to protect river values are common to all alternatives. Further actions designed to enhance river values vary by alternative (see "Alternatives" Chapter 8).

MANDATE TO PROTECT AND ENHANCE RIVER VALUES

The Merced River was added to the National Wild and Scenic Rivers System in acknowledgement of the river's (1) free-flowing condition, (2) water quality, and (3) outstandingly remarkable values (ORVs). Collectively, these qualities are referred to as river values. Section 10(a) of the Wild and Scenic Rivers Act (WSRA) provides the following broad direction related to river management:

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

Under the *Final Merced River Plan/EIS*, protection and enhancement of river values is accomplished by a series of initial actions to address immediate concerns and a commitment to a monitoring program to ensure that river values remain protected over time. In addition, all action alternatives in the plan include a number of site-specific actions directed toward the general improvement of conditions in the river corridor, thereby enhancing river values and fulfilling the goals of the WSRA.

THE RIVER VALUES OF THE MERCED WILD AND SCENIC RIVER

This section describes the river values of the Merced Wild and Scenic River. There are 20 outstandingly remarkable values (ORVs) in addition to the river's free-flowing condition and water quality, which the Wild and Scenic Rivers Act stipulates must be protected for all Wild and Scenic Rivers.

Free-Flowing Condition

A river must be in a free-flowing state to be eligible for inclusion in the National Wild and Scenic Rivers System. Once a river is designated, the managing agency is required to preserve it in its free-flowing condition for the benefit and enjoyment of present and future generations.

Water Quality

Another goal of the WSRA is to protect the water quality of designated rivers. Water quality in the Merced River is exceptionally high, and far superior to federal and state standards.

Outstandingly Remarkable Values (ORVs)

Section 1(b) of WSRA describes other values to be protected with wild and scenic river designation:

> *"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be preserved for the benefit and enjoyment of present and future generations".*

The Interagency Wild and Scenic Rivers Coordinating Council (Interagency Council or IWSRCC) was formed in 1995 to assist those federal and state agencies charged with administering designated wild and scenic rivers.[1] The council's mission is to make recommendations that will foster consistency in the interpretation and implementation of WSRA. The council has issued specific guidance and criteria for identifying ORVs (IWSRCC 1999):

- To be considered an ORV, a value must be river-related or river-dependent, [which means that] a value must be located in the river or on its immediate shorelands (generally within 0.25 mile on either side of the river); contribute substantially to the functioning of the river ecosystem; and/or owe its location or existence to the presence of the river.
- To be considered an ORV, a value must be rare, unique, or exemplary in a regional or national context, [which means that] a value should be a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary.

The council described additional criteria for assessing each category of ORVs listed in the WSRA, noting that these criteria may be modified to make them more meaningful to a particular river. The council also notes that while no specific national evaluation guidelines have been developed for the "other similar values" mentioned in WSRA, agencies may assess additional river-related values, including but not limited to hydrology, paleontology, and botany resources, consistent with the guidance provided (IWSRCC 1999).

The NPS described and refined ORVs for the Merced River several times during the planning history for the river. As noted above, ORVs for the Merced were discussed in the river's eligibility study (1986), the *1996 Draft Yosemite Valley Housing Plan*, and previous river plans (2000 and 2005) that were ultimately invalidated by legal decisions. The major changes in the ORVs through time were:

- Air quality was listed as an ORV in the *1996 Draft Yosemite Valley Housing Plan*. Air quality was not listed as an ORV in the 2000 *Merced River Plan/EIS* and subsequent plans because it was inconsistent with IWSRCC criteria, and because it is not river-related or river-dependent.
- "Scientific resources" were removed as an ORV because the topic was considered vague, and the resource was inherent in all ORVs.
- Two ORVs, geology and hydrology, were merged in 2010. In the view of subject-matter experts, these interdependent ORVs are difficult to address separately in the context of the *Final Merced River Plan/EIS*.

[1] See http://rivers.gov/council.html.

In 2010, the NPS conducted six workshops to consult with members of the public, academia, tribes, and other governmental agencies regarding ORVs for the *Final Merced River Plan/EIS*. At the public workshops, the NPS described the ORVs to date and asked three questions:

1. Do you have any specific knowledge of locations with river-related or river-dependent features or resources not addressed by the NPS ORV report?
2. Do you have any knowledge or observations regarding the conditions of river features and values that should be addressed?
3. How should the NPS protect and enhance river resources and values?

The NPS also accepted written input on ORVs, and more than 30 people or organizations submitted letters. With input from other agencies, tribes, and members of the public, Yosemite park staff used the best available science and their professional judgment to refine and finalize the list of river-related values for the *Final Merced River Plan/EIS* (Table 5-1). The Sierra Nevada region was the primary region of comparison for determining rare, unique or exemplary status. More detail about each of the Merced River ORVs is provided in this chapter.

TABLE 5-1: OUTSTANDINGLY REMARKABLE VALUES (ORVS) OF THE MERCED WILD AND SCENIC RIVER IN YOSEMITE

Outstandingly Remarkable Values of the Merced Wild and Scenic River in Yosemite National Park and the El Portal Administrative Site
Biological ORVs
Segments 1 and 5 – Merced River Above Nevada Fall and South Fork Merced River Above Wawona
1. The Merced River sustains numerous small meadows and riparian habitat with high biological integrity.
Segments 2A and 2B – Yosemite Valley
2. The meadows and riparian communities of Yosemite Valley comprise one of the largest mid-elevation meadow-riparian complexes in the Sierra Nevada.
Segments 7 and 8 – Wawona and South Fork Merced River below Wawona
3. Sierra sweet bay (*Myrica hartwegii*) is a rare plant found on river banks of the South Fork Merced River.
Geological/Hydrological ORVs
Segment 1 – Merced River Above Nevada Fall
4. The upper Merced River canyon is a textbook example of a glacially-carved canyon.
Segments 2A and 2B – Yosemite Valley
5. The "Giant Staircase," which includes Vernal and Nevada Falls, is one of the finest examples in the western United States of stair-step river morphology.
6. The Merced River from Happy Isles to the west end of Yosemite Valley provides an outstanding example of a rare, mid-elevation alluvial river.
Segment 4 – El Portal
7. The boulder bar in El Portal was created by changing river gradients, glacial history, and powerful floods. These elements have resulted in accumulation of extraordinarily large boulders, which are rare in such deposits.
Cultural ORVs
Segments 2A and 2B – Yosemite Valley
8. Yosemite Valley American Indian ethnographic resources include a linked landscape of specifically mapped traditional-use plant populations as well as the ongoing traditional cultural practices that reflect the intricate continuing relationship between indigenous peoples of the Yosemite region and the Merced River in Yosemite Valley.
9. The Yosemite Valley Archeological District is an unusually rich and linked landscape that contains dense concentrations of resources that represent thousands of years of human settlement.

TABLE 5-1: OUTSTANDINGLY REMARKABLE VALUES (ORVS) OF THE MERCED WILD AND SCENIC RIVER IN YOSEMITE

Outstandingly Remarkable Values of the Merced Wild and Scenic River in Yosemite National Park and the El Portal Administrative Site
Cultural ORVs (continued)
Segments 2A and 2B – Yosemite Valley (continued)
10. The Yosemite Valley Historic District represents a linked landscape of river-related or river-dependent, rare, unique or exemplary contributing resources that bear witness to the historical significance of the river system.
Segment 4 – El Portal
11. The El Portal Archeological District contains dense concentrations of resources that represent thousands of years of occupation and evidence of continuous, far-reaching traffic and trade. This segment includes some of the oldest deposits in the region and the archeological remains of the Johnny Wilson Ranch, a regionally rare historic-era American Indian Homestead.
Segment 5 – South Fork Merced River Above Wawona
12. This segment includes regionally rare archeological features representing indigenous settlement and use along the South Fork Merced River at archeological sites with rock ring features.
Segments 5, 6, 7, and 8 – South Fork Merced River Above Wawona, Wawona Impoundment, Wawona, South Fork Merced River Below Wawona
13. The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous far-reaching traffic and trade. Segment 7 includes the remains of the U.S. Army Cavalry Camp A.E. Wood documenting the unique Yosemite legacy of the African American Buffalo Soldiers and the strategic placement of their camp near the Merced River.
14. The Wawona Historic Resources ORV includes one of the few covered bridges in the region and the National Historic Landmark Wawona Hotel complex, which is one of the largest existing Victorian hotel complex in a national park and one of the few remaining in the United States with this high level of integrity.
Scenic ORVs
Segment 1 – Merced River Above Nevada Fall
15. Visitors to this Wilderness segment experience exemplary views of serene montane lakes, pristine meadows, slickrock cascades, and High Sierra peaks.
Segments 2A and 2B – Yosemite Valley
16. Visitors to Yosemite Valley experience views of some of the world's most iconic scenery, with the river and meadows forming a placid foreground to towering cliffs and waterfalls.
Segment 3 – The Merced Gorge
17. The Merced River drops 2,000 feet over 14 miles, a continuous cascade under exemplary Sierra granite outcrops and domes.
Segments 5 and 8 – South Fork Merced River Above and Below Wawona
18. The South Fork Merced River passes through a vast area of exemplary and wild scenic beauty.
Recreational ORVs
Segment 1 – Merced River Above Nevada Fall
19. Visitors to federally designated Wilderness in the corridor engage in a variety of river-related activities in an iconic High Sierra landscape, where opportunities for primitive and unconfined recreation, self-reliance, or solitude shape the experience.
Segments 2A and 2B – Yosemite Valley
20. Visitors to Yosemite Valley enjoy a wide variety of river-related recreational activities in the Valley's extraordinary setting along the Merced River.

PROTECTING AND ENHANCING RIVER VALUES

At the direction of the President in 1982, the Secretaries of the Interior and of Agriculture jointly promulgated regulations (hereafter referred to as the guidelines[2]) implementing WSRA. The guidelines interpret the "protect and enhance" directive of WSRA as a "nondegradation and enhancement mandate for all designated river areas, regardless of classification." Under the guidelines, rivers must be "managed to protect and enhance the values for which the river was designated, while providing for public recreation and resources uses which do not adversely impact or degrade those values." To do so, agencies are instructed to address the kinds and amounts of public use that the river area can sustain without adverse impact to river values. Guidance is also provided on the location of major public-use facilities with regard to the river corridor, and agencies are instructed to ensure that any such development does not adversely impact river values.[3]

The U.S. Court of Appeals for the Ninth Circuit (the Ninth Circuit) has interpreted WSRA and its implementing guidelines to mean that a comprehensive river management plan must contain provisions designed to prevent any adverse impacts or degradation from occurring. Specific thresholds must be stated for mandatory management action that will occur ahead of any such impacts or degradation. In addition, a comprehensive river management must address "both past and ongoing degradation."[4]

In its technical report on managing wild and scenic rivers, the Interagency Council recommends that managers should document and eliminate adverse impacts on ORVs, free flow, and water quality, "including activities that were occurring on the date of designation."[5] According to the council, any past degradation or adverse impacts in existence as of the date of designation should be carefully assessed, and the managing agency should establish "a positive trajectory for any value that was in a degraded condition."[6]

In order to assess the health of river values at the date of designation and to ensure that no further degradation or adverse impact occurs, the Interagency Council recommends "the river administering agency should document baseline resource conditions and monitor changes to these conditions."[7] According to the council, this baseline:

> *"…serves as the basis from which the degree/intensity of existing and future impacts can be measured. All future activities are to be measured from this baseline to ensure continued high quality conditions and to eliminate adverse impacts (protect) or improve conditions (enhance) within the river corridor. If a thorough resource assessment that includes a baseline description of the outstandingly remarkable values is not completed at the time of designation, this assessment should be included in the river management plan. The river management plan then establishes the baseline conditions at the time of designation—including a description of any degradation—and proposes management actions that will be taken to improve conditions until they meet the requirement to protect and enhance the river's values."*

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2 National Wild and Scenic River System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas, 47 FR 39454 (1982).

3 Id. at 39458-9. In order to be located within the river area, major public use facilities such as visitor centers, administrative facilities, and developed campgrounds, must be (1) necessary for public use or resource protection; (2) infeasible to move outside the river area; and (3) have no adverse impacts on River Values.

4 Friends of Yosemite v. Kempthorne, 520 F.3d 1024, 1035-36 (Ninth Circuit, 2008) [hereafter FYVIII].

5 IWSRCC, "Wild and Scenic River Management Responsibilities," page 26 (2002), available at http://www.rivers.gov/publications/management.pdf.

6 IWSRCC, "A Compendium of Questions and Answers Relating to Wild & Scenic Rivers," page 69 (2011), available at http://rivers.gov/publications/q-a.pdf.

7 IWSRCC, "Wild and Scenic River Management Responsibilities," page 22 (2002), available at http://rivers.gov/publications/management.pdf.

By assessing baseline conditions, past adverse impacts or degradation can be identified and corrected.[8] In addition, any downward trends that could lead to adverse impacts or degradation can be identified and addressed at an early stage. The river management plan then responds to the management situation described in the baseline condition report. The plan identifies management actions needed to correct situations where river values are threatened and proposes additional actions to enhance river values, where possible.

The WSRA program embodied in the river management plan includes the following steps, each of which is important in carrying out the act's mandate:

1. Identify and define river values
2. Define the terms "adverse impact," "degradation," "enhancement," "management standard," "management concern," and "localized concern" as they are used to describe the condition of river values
3. Assess the baseline condition of all river values, including both the current state and, to the extent possible, the condition at the time of designation (1987)
4. Select measurable indicators for each river value, and set metrics for the associated management standard and triggers for management concerns as well as thresholds for adverse impact and degradation
5. Assess each river value for the presence of adverse impacts, degradation and/or management concerns, as defined in steps 2 and 4
6. Describe and commit to management actions needed to mitigate or eliminate adverse impacts, degradation and management concerns
7. Implement a monitoring program for each indicator, with pre-determined conditions that will trigger specific management actions needed to ensure that river values remain protected and enhanced over time.

In April 2011, the NPS produced a draft baseline conditions report of river values both at the time of the Merced River's 1987 designation and 2010. The September 2012 version of the *Merced Wild and Scenic River Values Baseline Conditions Report* incorporates the findings of scientific studies conducted specifically for the Merced River planning effort.

KEY CONCEPTS FOR RIVER MANAGEMENT UNDER WSRA

The following sections provide definitions of "adverse impact" and "degradation" in the context of WSRA requirements, which are not to be confused with similar terminology used for the National Environmental Policy Act (NEPA) analysis included in "Volume II" of this EIS or the analysis completed in accordance with the National Historic Preservation Act (NHPA). For purposes of WSRA, an *adverse impact* to a river value is not synonymous with an *adverse impact* under NEPA or an *adverse effect* to a historical property under NHPA. In this chapter, adverse impacts under WSRA pertain specifically to river values and are defined according to measurable thresholds determined at a segmentwide scale. Adverse impacts documented in NEPA for this plan are resource-specific and may be observed at a smaller scale. Thus, the adverse impacts reported in Volume II do not necessarily equate to adverse impacts/effects under WSRA/NHPA.

[8] According to the Interagency Council, adverse impacts to river values "must be identified in development of the CRMP, with appropriate strategies detailed for their resolution." IWSRCC, "Wild and Scenic River Management Responsibilities," page 22 (2002), available at http://rivers.gov/publications/management.pdf.

Just as clarity is needed when defining the ORVs, it is necessary to define a number of terms in order to know how to translate the protection and enhancement mandate of WSRA into management activities.

Enhancement

Enhancement is defined as **actions** taken to improve the condition of a river value. This definition is based upon guidance provided by the Interagency Council: "Enhance rivers by seeking opportunities to improve conditions."[9] Such actions improve the conditions of a river value to the point where the river value's condition meets or exceeds the management standard (defined below). These actions where possible correct past and present degradation. The state of enhancement is the best possible condition for a river value. Both Chapters 5 and 8 address opportunities to enhance river values.

Management Standard

A management standard is defined as **the desired condition of a river value.** Under this plan, all river values will be protected and enhanced in accordance with WSRA and the Secretaries' Guidelines for River Areas. The management standard is the desired condition of a river value attainable given current trends and influences beyond NPS control. As discussed in more detail below, most river values are currently in a condition that is better than the management standard. Enhancement actions included in the plan will serve to increase river value quality above the management standard; in other words, the management standard is a protected state, but enhancement actions may still be possible.

Protection

Recent guidance by the Interagency Council (IWSRCC 2011) equates protection under WSRA with the elimination and/or avoidance of adverse impacts. It is, therefore, important to define adverse impact in order to know what constitutes a "protected" state.

Adverse Impact (WSRA)

Adverse impact is defined as **a substantial reduction in the condition of a river value in relation to the management standard as a result of public use or development.** An adverse impact is a segmentwide condition and requires immediate attention by the agency. It may be detected by periodic monitoring or by other means. When more than one indicator is monitored for any river value, an adverse impact associated with any one of the indicators constitutes an adverse impact on the value as a whole.

Under WSRA, the NPS must protect the river area against those impacts that "substantially interfere" with river values.[10] Like "degradation" (defined below) "adverse impact" is not explicitly defined in WSRA or the Secretarial Guidelines. In cases of this nature, the Ninth Circuit has held that, absent further guidance, such

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[9] IWSRCC, "Wild and Scenic River Management Responsibilities," page 26 (2002), available at http://rivers.gov/publications/management.pdf.

[10] Hell's Canyon Alliance v. U.S. Forest Service (USFS), 227 F.3d 1170, at 1177-78 (9th Circuit 2000). As one court has observed, the act requires managers to exercise discretion and judgment in order to strike a balance between use and preservation. Sierra Club v. Babbitt, 69 F. Supp. 2d 1202, 1254 (E.D. Cal. 1999). ("If anything, the WSRA seems deliberately ambiguous as to how an agency is supposed to balance the recognized tension between use and preservation.")

terms should be given their ordinary meaning.[11] In this plan, NPS has defined the term in accordance with its plain, ordinary meaning, and best professional judgment. Consistent with the statutory language in WSRA, an adverse impact is a substantial reduction in the condition of a river value throughout a given river segment. Such an impact could be sudden and unforeseeable, or it could develop over a specified period of time, as reflected through the findings of periodic assessments.[12]

As discussed in this chapter, the specific conditions that constitute an adverse impact have been defined for each river value. These metrics were established using the best available scientific information, including research conducted specifically for this planning effort, and reasoned professional judgment.

Degradation

Degradation is defined as **the state in which a river value has been fundamentally altered by public use or development to the point that its value is lost for at least a decade.** Degradation is a long-term condition that is segmentwide. A river value has been degraded when recovery would only be possible through a sustained change in park management and a significant investment of financial and natural capital. Degradation may be detected by the baseline condition assessment, by periodic monitoring, or by other means.

The Ninth Circuit has held under WSRA that a comprehensive management plan must "trigger management action before degradation occurs."[13] Like adverse impact, degradation is not defined in either the act or the guidelines. This plan therefore relies on the common, ordinary meaning of the term.[14] Merriam Webster's *Collegiate Dictionary, Tenth Edition*, defines degradation as a "decline to a low, destitute, or demoralized state," while degrade is defined as "to lower or impair in respect to some physical property" or "to lower in grade, rank, or status." Similarly, Webster's *Third New International Dictionary Unabridged* uses both of the above definitions of degrade as well as "to lower from a superior to an inferior level." Thus, the common, ordinary meaning of degradation is consistent with that given above: a substantial reduction in the condition of a river value to a clearly defined, low state of functioning.

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11 Friends of Yosemite Valley v. Norton, 348 F.3d 789, 796 (9thCircuit 2003) (citing Hell's Canyon Alliance v. USFS, 227 F.3d 1170, at 1177 (9th Cir. 2000).

12 The requirement that in order to be an adverse impact, a decline must be substantial and sustained over time is intended to exclude limited, transitory, or natural fluctuations in condition from the definition. Many river values may experience temporary downward trends that are not indicative of any threat to the segmentwide condition of the river value as a whole. For example, an animal may drown while crossing the Merced River, thereby temporarily increasing nearby coliform bacteria counts. In another example, some downward trends may be the result of natural variations in function over time. Drought years, for example, may negatively influence the diversity and productivity of grasses in Yosemite Valley Meadows for several years in a row. For these reasons, the trends leading to adverse impacts must be reflective of something more than inconsequential changes or short-term fluctuations. More rarely, sudden unforeseeable impacts may occur that require immediate action to mitigate.

13 FYVIII, 520 F.3d 1024, 1034-35 (Ninth Circuit 2008).

14 Friends of Yosemite Valley v. Norton, 348 F.3d 789, 796 (9th Circuit 2003) (citing Hell's Canyon Alliance v. USFS, 227 F.3d 1170, at 1177 (9th Circuit 2000). "Degradation" is not a term from the act, but from the Secretaries' Guidelines for River Areas. The Supreme Court has recently reaffirmed that where an agency's regulations construing a statute are ambiguous, the agency's own interpretation of those terms are entitled to substantial weight. Chase Bank USA, N.A. v. McCoy, 131 S. Ct. 871, 880 (2011). In this case NPS has determined that the ordinary meaning of the term "degradation" is the most reasoned reading of the text of the guidelines because it will enable the agency to use the best available science to establish clear and specific thresholds for degradation of each outstandingly remarkable value (ORV), as well as a monitoring program that triggers action intended to prevent degradation prior to its incidence. See FYVIII, 348 F.3d at 1034.

As presented in this chapter, each river value has a specific set of conditions that equate to degradation. The NPS relied on the best available science and reasoned professional judgment in determining those conditions.

Management Concern

The goal of this river plan is to maintain all river values in a condition that meets or exceeds the associated management standard. However, in a dynamic natural setting, fluctuations in resource conditions can be expected to occur over time. The key to successful management then is to provide a series of checkpoints in the monitoring framework that will be used to trigger actions to arrest downward trends before conditions drop to the level of, and then perhaps below, the management standard. Therefore, for each river value, a series of "trigger points" have been established at incremental levels above the management standard. When monitoring indicates that the condition of a river value has reached a specific trigger point, the situation is described as a ***management concern***. Management concerns are to be immediately addressed and corrective measures have been identified and included in the management framework described for each river value later in this chapter as "Actions to Protect River Values."

Management concerns are correctable and do not necessarily bring the river value condition to the level of adverse impact or degradation. Another form of management concern is a downward trend in river condition that is occurring so slowly that the river condition has not fallen below the management standard but might do so if the downward trend is not arrested and reversed. In either case, the NPS will take the actions identified for each river value when a trigger point is reached. A river value that has documented management concerns is still considered to be protected but requires management action to remain so.

Localized Concern

Localized concerns are localized areas of impact to components of a river value whose overall condition is within the management standard. Management actions can be taken that will improve (enhance) conditions in the river corridor. Localized concerns may also be addressed by actions such as long-term monitoring programs, such as water quality monitoring to identify any localized changes in water quality. Because of their limited extent, localized concerns can be corrected with relatively simple actions that help to ensure the associated river value remains at or above the management standard.

Baseline Condition Assessment

To assess the health of river values and ensure that no degradation or adverse impact occurs, the Interagency Council recommends that managing agencies "document baseline resource conditions and monitor changes to these conditions."[15] According to the council, the baseline resource condition:

> "… serves as the basis from which the degree/intensity of existing and future impacts can be measured. All future activities are to be measured from this baseline to ensure continued high quality conditions and to eliminate adverse effects (protect) or improve conditions (enhance) within the river corridor. If a thorough resource assessment that includes a baseline description of the ORVs is not completed at the time of designation, this assessment should be included in the river management plan. The river management plan

[15] Interagency Wild and Scenic Rivers Coordinating Council, "Wild and Scenic River Management Responsibilities," page 22 (2002), available at: http://rivers.gov/publications/management.pdf.

> then establishes the baseline conditions at the time of designation—including a description of any degradation—and proposes management actions that will be taken to improve conditions until they meet the requirement to protect and enhance the river's values …."[16]

By assessing baseline conditions, managing agencies can identify and correct past degradation.[17] Downward trends that could lead to adverse impacts and degradation can be identified and addressed at an early stage. In April 2011, the NPS produced a draft baseline conditions report for river values both at the time of the Merced River's 1987 designation and in 2010. The final baseline conditions report is available at http://www.nps.gov/yose/parkmgmt/mrp_documents.htm.

Monitoring Program

The monitoring program in the *Final Merced River Plan/EIS* fulfills the direction in the guidelines to ensure "studies will be made during preparation of the management plan and periodically thereafter to determine the quantity and mixture of recreation and other public use which can be permitted without adverse effect on the resource values."[18] This plan defines a set of measureable indicators to monitor the condition of each river value as described in this chapter. Yosemite National Park staff selected indicators for their ability to provide insight into the integrity of the river value and provide early warnings of change. Park staff also required indicators to be derived from objective and easily obtained data collection that is repeatable across time and across observers. The monitoring program for an individual river value may be refined, if necessary, as more information becomes available.

RIVER VALUE CONDITION, PROTECTION, AND ENHANCEMENT

The following sections describe the program to protect and enhance each ORV as proposed in the *Final Merced River Plan/EIS*. For each ORV, the following will be discussed:

- The current condition of each ORV and its condition at the time of the river's 1987 designation
- A description of the management program and actions to ensure each ORV is protected from adverse impact or degradation. This management program includes:
  - A description of the indicator(s) used to monitor the condition of each ORV
  - Definitions of management standard, adverse impact, and degradation

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16 Interagency Wild and Scenic Rivers Coordinating Council, "A Compendium of Questions & Answers Relating to Wild & Scenic Rivers," page 70 (2011), available at www.rivers.gov/publications/q-a.pdf. For the Final Merced River Plan/EIS, the baseline conditions assessment is summarized in this chapter, and provided in its entirety in an attached DVD. Note that although the Council uses the term "adverse effects," the NPS uses the term "adverse impacts" within this document and the Tuolumne River Plan, in accordance with the terminology used in the 1982 *Federal Register* regulations for wild and scenic rivers (National Wild and Scenic River System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas, 47 *FR* 39454 (1982)).

17 According to the Council, adverse impacts to River Values "must be identified in development of the comprehensive management plan, with appropriate strategies detailed for their resolution." Interagency Wild and Scenic Rivers Coordinating Council, "Wild and Scenic River Management Responsibilities," page 22 (2002), available at http://rivers.gov/publications/management.pdf.

18 National Wild and Scenic River System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas, 47 *Federal Register* 39454, at 39459 (1982). In addition, by clearly stating the baseline conditions, management concerns, actions to correct those, indicators, standards, and triggers for corrective action, the plan "will state …. the specific management measures which will be used to implement the management objectives for each of the various river segments and protect aesthetic, scenic, historic, archeologic and scientific features" 47 FR 39454, at 39458 (1982).

  - A description of the conditions that would trigger increasingly intensive management actions to protect each ORV

- Management concerns and associated protective actions included in Alternatives 2-6

RIVER VALUE—FREE-FLOWING CONDITION

River Value: Free-flowing Condition
Location: All Segments of the Merced River
Description: A free-flowing river, or section of a river, moves in a natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway (WSRA 1968, Section 16)
Management Objective: Reduce the overall amount of human-constructed modifications within the bed and banks of the Merced River through restoration, redesign, and other appropriate methods.

Condition Assessment

Condition at Time of Designation (1987)

As the Merced River flows from its headwaters in the High Sierra at 13,000 feet to El Portal at 2,000 feet, various elements impeded its movement at the time of designation in 1987.[19]

- Just above Nevada Fall, a one- or two-foot high deflection bar prevented high flows from leaving the main channel and going down the Mist Trail gully.
- Between Nevada Fall and the Happy Isles Bridge, bedrock and massive talus boulders line the river channel, making it more resistant to human impacts. The free-flowing condition of the river was largely intact in this section. From Happy Isles Bridge to Clark's Bridge, the channel was confined on the right bank by moraines for much of its length. This reach was generally stable at the time of designation (Madej et al. 1991).
- Between 1879 and the early 1970s, the NPS performed extensive bank stabilization to prevent channel migration near campsites and infrastructure. Riprap—used successfully as a management tool to prevent channel erosion—inhibits the free-flowing condition of the river by preventing natural stream processes, such as lateral migration and point bar formation (Florshiem et al. 2008; Schmetterling et al. 2001). By 1987, 25% of the river's banks had undergone bank revetment between Clark's Bridge and Sentinel Bridge (the area with the greatest infrastructure and human presence), primarily with riprap. In the less-visited West Valley downstream of Swinging Bridge, riprap lines only 2% of the channel.

Additionally, two dams and numerous utility crossings at the time of designation affected the Merced River's free-flowing condition:

- The Happy Isles Dam footing, a three-foot-high structure spanning the river, created a barrier to flow, though it was no longer used to produce electricity or divert water.

[19] The Rare, Mid-Elevation Alluvial River ORV (#6) is closely related to the free-flow value, as a river's ability to flow unimpeded in low-gradient areas creates its alluvial nature. However, the Merced River's almost unique mid-elevation alluvial nature merited its inclusion as an ORV separate from free-flow. Consequently, impoundments, diversions, straightening, riprapping, or other modifications of free-flow (as defined in WSRA and provided in the introduction to free-flow) are discussed in this section, while human actions or structures that more affect the river's alluvial nature are discussed under ORV 6. The reader is advised to read both sections of this chapter for a complete picture of the condition of both its free-flowing nature and its alluvial nature.

- The Cascades Diversion Dam, a 17-foot-high structure about one mile downstream of Pohono Bridge, impeded the free-flowing condition of the river, although it had not been used for hydroelectricity since the mid-1980s. This decaying structure was removed in 2004.
- Buried utility lines crossed the riverbed at 13 locations, acting as small dams. The North Pines Lift Station at the confluence of the Merced River and Tenaya Creek also exacerbated riverbank erosion.

In Segment 4 at the time of designation, the Merced River near El Portal was confined by Foresta Road and associated abutments and riprap, which encroached into the historical channel bed in places. In El Portal, a small levee was located on the left (south) bank of the Merced River, just downstream from the Highway 140 Road Bridge. This approximately 300-foot deflection bar protects the Trailer Village area from flooding. There is also a levee near the gas station and store. Other modifications to the river in Segment 4 include remnant rock diversions.

In Segment 6 at the time of designation in the Wawona area, a small impoundment at the intake of Wawona's surface water supply was located near the end of Forest Drive. By the time of designation, the pool had filled with small cobbles, sands, and other sediments; however, this impoundment was not a major source of sediment and did not act as a significant barrier to river flow and dynamics.

Current Condition

In Segment 1, the deflection bar just above Nevada Fall remains. Water for domestic consumption at Merced Lake High Sierra Camp is taken directly from the Merced River. Such withdrawals constitute at most 0.5% of the river's flow, as determined from water withdrawal rates in 2012 (one of the driest years in Yosemite history).

In Segment 2, restoration projects have removed approximately 1,700 cubic yards of riprap from the Merced River's banks; 2,600 feet of biotechnical bank stabilization have been installed; and 15,000 feet of fencing have been installed (Cardno ENTRIX 2012). In addition, the 13 buried utility lines have been removed from the riverbed, and the North Pines Lift Station has been removed from the riverbank at the confluence of the Merced River and Tenaya Creek. These actions eliminated some impediments to the free-flowing condition of the river.

No hardened bank stabilization, such as riprap, has been installed since the 1987 designation. Although the installation of riprap in Yosemite Valley largely ceased in the early 1970s, more than 3,500 yards of riprap still line the edges of riverbanks and streambanks in Yosemite Valley. Since 1987, the river has undermined riprap in some locations, and bank erosion is occurring behind the lines of riprap in other locations. Finally, the footings of the former Happy Isles dam remained in place.

In Segment 3, the Cascades Diversion Dam, a 17-foot-tall impoundment that backed up the river 200 feet, was removed in 2004, allowing the river channel to be restored to natural conditions. Also in Segment 3, the El Portal Road was partially rebuilt after it sustained significant damage during the 1997 flood (the Merced River eroded the road's embankments). About 7.5 miles of the roadway were rebuilt, with extensive riprap necessary.

For Segment 4, conditions in El Portal continue to be similar to those at the time of the river's designation. The river is confined by Highway 140 and revetment (riprap, for example), which in places encroach into the historical channel bed. The small deflection bar built to protect the Trailer Village still exists, as does the small levee and remnant rock diversions. Water for domestic consumption is taken from three wells in the

El Portal area. These wells do not appear to affect groundwater levels or those in the Merced River (which has substantially higher flows here than it does in Yosemite Valley).

Water for domestic consumption in Wawona (Segment 7) is taken directly from the South Fork Merced River at Swinging Bridge, in Segment 6. In most years, there is adequate flow for the withdrawals, but in dry years like 2012 and 2013, river levels can reach critically low levels. In 1987, the NPS implemented the *Wawona Water Conservation Plan*, which set the rate of diversion from the Wawona water intake at 0.59 cubic feet per second (water is diverted for domestic and irrigation uses) (NPS 1987). To protect instream flows for aquatic habitat, the plan enacts mandatory water conservation (such as banning irrigation) whenever the river reaches flows of less than 6 cubic feet per second. At flows of less than 6 cubic feet per second, diversions are limited to 10% of the river flow. The plan adequately protects the river's aquatic invertebrates and other life forms during such drought years, but increases in such withdrawals could harm native fauna (Holmquist and Waddle 2012). All alternatives would continue the conservation plan.

In Segments 5 and 8, current free-flowing conditions remain the same as in 1987 at the time of river's designation. There are no human-caused impediments within the river channel. In Segment 7 in Wawona, the South Fork Bridge was damaged during the 1997 flood and replaced in 2006 with a new bridge without piers in the river channel. As established in the WSRA Section 7 determination process, an evaluation for direct and adverse impacts from the new bridge found no significant impediment to the free-flowing condition of the river during most flow conditions.

Management Indicator and Monitoring Program for Free-Flowing Condition of the Merced River

WSRA specifies guidelines for determining appropriate actions within the bed and banks of a Wild and Scenic River. Section 7 of the act restricts hydrologic and water resource development projects and directs managing agencies to specify a process to determine whether or not a proposed water resources project is appropriate. Chapter 4 of the *Final Merced River Plan/EIS* articulates the Section 7 Determination Process for Water Resources Projects. This formal process is used to ensure that the free-flowing condition of the Merced River is preserved, in lieu of a specific monitoring program. Because the Section 7 Determination Process prevents impacts to the river's free-flowing condition, it is not necessary to define adverse impact, degradation, or management concerns.

The Section 7 analysis would take place before implementation of any hydrologic and water resource development project to ensure it would cause no adverse impact or degradation to the free-flowing condition of the river. Proposed park management actions (for example, projects involving construction, maintenance, or other activities involving ground disturbance) are already regularly reviewed by subject-matter experts and park management at NPS's Monthly Planning Forum. Any project proposed within the bed and banks of the Merced River is mandated to have a completed Section 7 determination process to ensure compliance with Section 7 of WSRA.

In addition, NPS will remove riverbank riprap to restore natural river processes, replacing it with native riparian vegetation for a total of 3,400 linear feet. Bioengineering techniques would be used on 2,300 feet of riverbank where riverbank stabilization is necessary for infrastructure protection. NPS will also remove the abutments and infrastructure associated with the former Happy Isles footbridge, relocate the Pohono Bridge gauging station out of the bed and banks of the river, remove 34 units within the ordinary high water

mark at Housekeeping Camp, remove the river gauge base, and remove any remaining sewer treatment facilities, sewer and water lines, and man-holes from within the bed and banks of the river.

Conclusion: Protecting and Enhancing Free-Flowing Condition

With the removal of Cascades Dam, the restoration actions in Yosemite Valley, and the removal of the utility crossings and lift station, the river's free-flowing condition has improved since designation. To prevent future impacts, the NPS would require all projects involving construction within the bed or banks of the river to undergo a Section 7 analysis. The removal of riprap, as called for in the alternatives, will further enhance the river's free-flowing condition.

RIVER VALUE—WATER QUALITY

River Value: Water Quality
Location: All Segments of the Merced River
Management Objective: Maintain exceptional water quality on all segments of the Merced River within Yosemite National Park and the El Portal Administrative Area.

Condition Assessment

Condition at Time of Designation (1987)

The U.S. Geological Survey (USGS) began ongoing water quality monitoring of the Merced River at the Happy Isles gauge in 1968. At the time of river's designation in 1987, the USGS continued to monitor the Happy Isles gauge. Then, in 1994, the NPS published a comprehensive water quality report, which established baseline water-quality data for the Merced River (NPS 1994). The overall water quality of the river was exceptionally high, with relatively few impacts caused by development and visitor use. Water quality in the South Fork Merced River above Wawona was characterized as high, while generally low in nutrients, salts, and suspended sediment, and high in dissolved oxygen. Only minor impacts from human activities were indicated (NPS 1994). The limited data that have been collected for the Merced River above Nevada Fall indicate that water quality is high (Clow et al. 1996).

Current Condition

Current water quality in all Merced River segments is high, with most water quality sampling results near natural background levels (Clow et al. 2011). Water samples collected near Sentinel Bridge and Pohono Bridge showed higher bacteria levels than elsewhere in the watershed, but even those levels were well below public health limits (Clow et al. 2011). Nutrient concentrations are very low, as they are for similar undeveloped areas (Brown and Short 1999; Clow et al. 2011). Some Yosemite Valley samples (9%-14%) indicated trace amounts of petroleum hydrocarbons (Peavler et al. 2008), most likely a result of stormwater runoff from parking lots and roads. Petroleum hydrocarbon concentrations, when detected, were well below the State of California water-quality limits. The overall water quality of all stretches of the river remains exceptionally high, far exceeding state water quality standards and as good as, or better than, conditions at the time of designation.

Management Indicator and Monitoring Program for Water Quality

This section discusses the proposed management program for protecting water quality, including the indicator(s) to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

Indicator Description: Water Quality

The following variables related to water quality are directly associated with human contact with water:

- Nutrient levels (total dissolved nitrogen, total phosphorus, nitrate plus nitrite, and total dissolved phosphorous)
- Total petroleum hydrocarbons
- *E. coli*

These three variables are appropriate to monitor because their levels are related to human activities and human contact with water: people swimming in the river or manure from horses can lead to elevated levels of *E. coli* and nitrogen species; people bathing or washing dishes in the river can increase phosphorus/ phosphate levels; and vehicular use, roads and other development contributes to hydrocarbon pollution. Total coliform, temperature, dissolved oxygen, and conductivity also vary with human use, but are less effective variables to monitor (as indicators) because they are lagging indicators of human impact and can be affected by other factors.

Specific indicators derived from these metrics that will be used to assess current water quality conditions on the Merced River are:

1. **Nutrient Indicators:** 75th percentile of annual nutrient concentrations (total dissolved nitrogen, total phosphorus, nitrate plus nitrite, and total dissolved phosphorous) sampled at each site
2. **Petroleum Hydrocarbon Indicator:** Number of samples with total petroleum hydrocarbon concentration equaling or exceeding 13 µg/l at each site
3. ***E. coli* Indicator:** 50th percentile of annual *E. coli* concentrations sampled at each site

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The Secretarial Guidelines direct that water quality in wild, scenic, and recreational river areas "will be maintained or, where necessary, improved to levels which meet Federal criteria or federally approved State standards for aesthetics and fish and wildlife propagation."[20] Water quality in the Merced and South Fork Merced rivers far exceeds state standards for these parameters. The California State Water Resources Control Board has issued a Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, which adheres to the federal anti-degradation policy (40 CFR 131.12) by stating: "Chief among the State water policies for water quality control is State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California). It requires that wherever the existing quality of surface or ground waters is better than the objectives established for those waters in a basin plan, the existing quality would be maintained unless as otherwise provided by Resolution No. 68-16 or any revisions thereto."

[20] National Wild and Scenic River System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas, 47 FR 39459 (1982).

The management standard adheres to this policy by utilizing the baseline established in 2004-2008.[21] Site-specific management standards are exceeded when a single nutrient or *E. coli* indicator exceeds the baseline condition in more than one out of any five consecutive years. Similarly, the standard for the petroleum hydrocarbon indicator is one or more detections (at greater than 13 μg/l) at a site in more than one out of five consecutive years.

Adverse Impact

An adverse impact would be either of the following:

- Exceedance of the EPA's bacteriological criteria for water contact recreation *E. coli* statistical threshold value (STV) standard of 410 CFU/100ml (Colony Forming Units per 100 milliliters) and the geometric mean standard of 126 CFU/100ml (EPA 2012) in a 30-day interval following two consecutive monthly samples exceeding the 235 CFU/100ml beach action value (EPA 2012). Exceedance of the bacteriological standard indicates a persistent contamination problem beyond normal flushing rainstorms that would likely result in a violation of state water-quality standards (protecting the designated use of Merced River waters for recreation).
- Exceedance of EPA Maximum Contamination Level for nitrate+nitrite of 10 mg/l (milligrams of nitrate and nitrite expressed as the weight of elemental nitrogen). Exceedance of the Nitrate+Nitrite criteria would be a violation of state water-quality standards as applied to municipal water sources. Waters designated for municipal use must also adhere to California drinking water regulations (Title 22), which include the EPA's Maximum Contaminant Limit for Nitrate+Nitrite. Levels of Nitrate+Nitrite, currently within Yosemite, are only 1% to 10% of this Maximum Contaminant Limit.

Degradation

Degradation is defined as the inclusion of any Merced River segment on the federal Section 303d (Clean Water Act) listing of waters not attaining minimum water quality objectives. For the Merced River and the chosen water quality indicators, this will occur when there are 10 or more exceedances of the EPA's water quality standards over the course of the 303d reporting period of three years.

States are mandated "to identify waters that do not meet applicable water quality standards with technology-based controls alone and prioritize such waters for the purposes of developing Total Maximum Daily Loads (TMDLs)," according to California State Water Resources Control Board.

Monitoring Program to Prevent Future Adverse Impacts or Degradation

The Merced River's water quality, as measured by nutrient levels and *E. coli*, would be measured at six locations and petroleum hydrocarbons at three of those six locations (noted with asterisks):

- Merced River above Nevada Fall
- Merced River above Happy Isles Bridge
- Merced River above Pohono Bridge*
- Merced River below Foresta Bridge*
- South Fork Merced River above Swinging Bridge
- South Fork Merced River below Wawona Campground*.

[21] Baseline is defined as the 95% upper confidence limit (UCL95) of the 50th (*E. coli*) or 75th (nutrients) percentile of a particular metric.

The monitoring protocol is available as a part of the overall Visitor Use and Impacts Monitoring program field guide: http://www.nps.gov/yose/naturescience/upload/Visitor-Use-Monitoring-Guide-v1-0-2010.pdf.

Table 5-2 displays trigger points related to water-quality conditions and related management responses should a trigger be exceeded.

TABLE 5-2: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR WATER QUALITY

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Statistically significant upward trend in concentration of any of the indicator analyses at any one monitoring site.	Initiate investigation of water quality conditions in the area of consideration to identify potential source.	These standards indicate possible deterioration of water quality. Steps taken here are focused on determining the persistence and source of the problem and whether more serious investigation and action are required to resolve the issue.
Trigger Point 2: Exceedance of recommended USEPA bacteriological criteria for water contact recreation *E. coli* Beach Action Value of 235 CFU/100ml at any one monitoring site.	Repeat sampling within one month at affected site. If the Beach Action Value is exceeded a second time, initiate weekly sampling of *E. coli* at sites exceeding the limit. Assure at least 5 samples are taken over the course of the 30 days following the second monthly sample in order to determine the 30-day geometric mean and adherence to the recommended *E. coli* standard. If the geometric mean is greater than the 30-day standard of 126 CFU/100ml, a subsequent investigation shall take place.	This trigger point indicates potential violation of a state (and EPA) water quality standard. Subsequent prescribed sampling would determine whether the event was one time only or more persistent (more serious) in nature.
Trigger Points 1 or 2	These actions would be taken for either trigger point above, depending on the type of impact: • Increase educational messaging regarding water quality. • If impacts are related to human waste (and where allowed by management objectives), provide toilet facilities. • If impacts result from erosion, improve conditions through restoration, trail rerouting, etc. • If impacts result from stock use, redirect/ reduce/limit stock use in certain areas. • Increase enforcement of permit requirements. • Increase ranger patrols in river areas to protect water quality and educate users. • Close some areas temporarily or permanently, and/or reduce use of the affected area(s).	Actions would be initiated during or after the investigations listed under either trigger point to protect water quality and human health.
SOURCE: Environmental Protection Agency		

Management to Protect and Enhance Water Quality

Current Findings Regarding Management Standard, Adverse Impact, and Degradation

Table 5-3 compares the current condition of the Merced River water quality to the definitions of management standard, adverse impact, degradation, and management concern.

Water quality along all segments is of high quality with most levels near the natural background.

Management Concerns and Protective Actions

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-2. There are no management concerns associated with the water quality river value.

TABLE 5-3: CURRENT CONDITION OF WATER QUALITY

Metric	Based on Comparison to Baseline Conditions[a]
Meets management standard: The management standard for water quality is defined as the baseline established in 2004-2008, with nutrients, *E. coli,* and petroleum hydrocarbons all measured.[a]	Water quality along all segments is of high quality with most levels near the natural background.
Management concern present: Statistically significant upward trend in concentration of any of the indicator analyses at any one monitoring site.	None present.
Adverse impact: Exceedance of USEPA bacteriological criteria for water contact recreation: *E. coli* and nitrates.[b]	
Degradation: The inclusion of any Merced River segment on the state listing under section 303d of the Clean Water Act of waters not attaining minimum water quality objectives.[c]	

NOTES:

[a] The management standard for nutrients is exceeded when the 75th percentile of annual sampling exceeds the 95% upper confidence limit of the baseline condition in more than one in five years at any sample location. The management standard for *E. coli* is exceeded when the 50th percentile of annual sampling exceeds the 95% upper confidence limit of the baseline condition in more than one in five years at any sampling location. The standard for petroleum hydrocarbons is exceeded when they are detected (at current detection limits) in more than one in five years.

[b] (1) *E. coli* exceeds one-day standard of 235 MPN/100 ml and subsequent exceedance of the 90-day geometric mean standard of 126 MPN/100 ml for water contact recreation, or (2) exceedance of USEPA maximum contamination level for nitrate + nitrate of 10 milligrams per liter.

[c] For the Merced River and the chosen water quality indicators, this would occur when there were 10 or more violations (exceedances) of the USEPA water quality standards over the course of the 303d reporting period of three years.

Abbreviations: *E. coli* = *Escherichia coli;* ml = milliliter; MPN = most probable number of bacterial colonies; USEPA = U.S. Environmental Protection Agency

Localized Concerns and Enhancement Actions

Localized concerns pertaining to this river value include water quality related to the impacts of automotive fluids and surface water runoff; potential hazards related to dump stations, septic tanks, and leach fields; and accelerated erosion and potential sediment loading in the Merced River. While water quality in the Merced River meets standards, the Secretarial Guidelines (USDI and USDA 1982) direct managing agencies to maintain or, where necessary, improve water quality to levels that meet federal criteria or federally approved state standards in Wild and Scenic River areas. To address these considerations, the alternatives in Chapter 8 consider the following actions:

- Wawona Impoundment: Retain the current water collection and distribution system, and continue to implement the Water Conservation Plan related to the minimum flow analysis for the South Fork.
- Pack Trail from Concessioner Stables in Yosemite Valley to Happy Isles: Either remove or reroute the pack trail along the Merced River and restore the area to natural conditions depending on the alternative.
- Odger's Fuel Storage Facility: Remove and relocate the facility out of the 500-year floodplain.
- Yosemite Village Day-use Parking Area: Move the parking area various distances north depending on the alternative. Restore meadow and floodplain communities.

- Parking Areas: Move parking lots away from the river and/or construct stormwater run-off mitigation measures that incorporate best management practices.
- Upper Pines RV Dump Station: Relocate the dump station away from the river to a site between Curry Village and the entrance to the Pines Campgrounds.
- Wawona RV Dump Site: Relocate the dump site to an appropriate location away from the river.
- Waste Water Collection System for the Wawona Campground: Remove the current septic system and develop a waste water collection system. The NPS would build a pump station above the Wawona Campground to connect the facility to the existing waste water treatment plant.
- Delineate the boundaries of the two formal picnic areas in Wawona, adding hardened river access points and paths to the river that encourage visitors to walk in the resilient areas (if needed, place fencing to direct visitors to these hardened access points).

Actions to address accelerated riverbank erosion and potential sediment loading are described under Geological/Hydrological ORV 6— the Merced River in Yosemite Valley as an outstanding example of a rare, mid-elevation alluvial river.

Conclusion: Protecting and Enhancing Water Quality

The Merced River's water quality currently has no adverse impact, degradation, or management concerns. The NPS would also regularly monitor water quality and take protective actions should specific trigger points be reached. These trigger points are selected to inform managers well in advance of adverse impacts or degradation to water quality.

BIOLOGICAL ORVs

This section describes the program to protect and enhance each Biological ORV as proposed in the *Final Merced River Plan/EIS*. Three Biological ORVs exist in the Merced River corridor, each related to specific segment(s) of the river (Table 5-4).

TABLE 5-4: BIOLOGICAL ORVS AND ASSOCIATED INDICATORS

ORV Number and Key Resource	Segment(s)	Indicator to be Monitored through Time
1. High-elevation meadows and riparian habitat	1 and 5	1. Meadow bare soil 2. Meadow fragmentation resulting from proliferation of informal trails 3. Streambank stability
2. Mid-elevation meadows and riparian communities in Yosemite Valley	2	1. Meadow fragmentation resulting from proliferation of informal trails 2. Status of riparian habitat 3. Riparian bird abundance
3. Sierra sweet bay population in the Wawona area	7 and 8	Population decline

Biological ORV 1—High-Elevation Meadows and Riparian Habitat

ORV 1—The Merced River sustains numerous small meadows and riparian habitat with high biological integrity.
Location: Segment 1 (Merced River above Nevada Fall) and Segment 5 (South Fork Merced River above Wawona)
Rationale: Numerous small meadows and adjacent riparian habitats in this high-elevation environment are influenced by flooding from the Merced. The meadows and riparian habitat are exemplary in their intact condition and the great diversity of plant and animal species they support.
Management Objective: Manage human use in meadows and riparian habitat within the Merced River corridor to maintain high ecological condition, minimize habitat fragmentation, and protect the integrity of streambanks to conserve ecosystem processes associated with meadow and riparian function.

Condition Assessment

ORV Condition at the Time of Designation (1987)

Meadow conditions in 1987 at the time of designation were likely similar those of today, with some exceptions. At the time of designation, the NPS allowed the concessioner to graze its pack stock at Merced Lake-West Meadow and Merced Lake-Shore Meadow. Trampling and grazing impacts were observed in these areas as early as the 1960s (Sharsmith 1961). Such impacts were likely present in the early 1990s (and at the time of designation), motivating the NPS to close these meadows to grazing.

In general, the drier, upland edges of subalpine meadows in the Sierra Nevada became more forested during the last century. A comprehensive study by Millar et al. (2004) determined that this occurred during a "single distinct climatic pulse" that occurred from 1946 to 1975, when the weather was warm and dry with little annual variability and conditions fostered pine seed germination. Historic sheep grazing (Sharsmith 1959; Dunwiddie 1977) and fire suppression (DeBenedetti and Parsons 1979) are also implicated in conifer invasion in meadows. Pack stock grazing and fire suppression that occurred between 1946 and 1975 may have contributed to the forest invasion by adding more stress to grazed meadow plants. It is difficult to ascertain the extent, timing, or causes of this historic forest spread in specific subalpine and alpine reaches of the Merced River corridor due to a lack of studies (Ballenger et al. 2011).

Current ORV Condition

In 2010, park personnel evaluated the condition of high elevation meadows of the Merced River corridor. This study evaluated every meadow in the corridor in its entirety, using assessment protocols tailored to different elevations. In upper montane and subalpine meadows, the study evaluated over 30 different metrics associated with meadows. In alpine meadows, the study focused on coarse composition of vegetation and substrate, and plant communities. In subalpine sites, the study assessed streambank and channel condition using an interagency protocol (Burton et al. 2011), and in alpine sites, the study used a rapid assessment protocol.

The study found that most meadows reflected high ecological integrity, with the exception of some site-specific impacts. Alpine meadows displayed little to no impacts from visitors or pack stock, with the exception of braided and rutted formal trails in several meadows along the Red Peak and Triple Peak Forks (Ballenger et al. 2011). No stock impacts or informal trails were otherwise observed in alpine meadows in the river corridor (Ballenger et al. 2011). Some upper montane meadows displayed site-specific negative impacts. For example, Merced Lake - East Meadow exhibited very low vegetation cover and high bare-ground levels associated with

several years of administrative pack stock grazing. Researchers also documented extensive informal trails at the same two upper montane meadow sites (Ballenger et al. 2011).

Management Indicator and Monitoring Program for ORV 1

This section discusses the proposed management program for this ORV, including the indicators to be used, the definitions of management standard, adverse impact, and degradation; and the monitoring program. As noted above, the NPS conducted a widespread condition assessment for meadows in Segment 1 in 2010 (Ballenger et al. 2011). This condition assessment provided a foundation to focus meadow monitoring in Segment 1 on areas of special concern. Three distinct indicators were selected to monitor meadow conditions through time. The indicators are: (1) bare soil cover in meadows, (2) fragmentation of meadow habitats as a result of proliferation of informal trails; and (3) physical streambank stability.

Indicator 1 – Meadow Bare Soil for ORV 1

Indicator Description

The purpose of the bare soil indicator is to monitor meadow integrity in relation to pack stock grazing and trampling by people or packstock. The amount and distribution of bare soil is considered an important indicator of meadow integrity as it directly relates to site stability and susceptibility to wind and water erosion (Smith and Wischmeier 1962; Morgan 1986; Benkobi et al. 1993; Blackburn and Pierson 1994; Gutierrez and Hernandez 1996; Cerda 1999). Researchers have linked grazing activities to increases in bare soil as well as decreased plant cover, decreased primary productivity, and shifts in species composition (Miller and Donart 1981; Trimble and Mendel 1995; Olson-Rutz et al. 1996; Fahnestock and Detling 2000; Cole et al. 2004). Trampling, by either humans or stock, can produce similar results (Cole 1995; Liddle 1975, 1991) with the added impact of soil compaction that compromises root growth and water infiltration (Gilman et al. 1987; Unger and Kaspar 1994; Pietola et al. 2005).

Candidate metrics for monitoring ecological condition in meadows subject to grazing and/or trampling pressures include vegetative cover, bare soil, species composition, and meadow productivity. Bare soil and basal vegetative cover are more sensitive indicators of meadow condition than species composition (Cole et al. 2004). For instance, bare soil increases at lower levels of disturbance compared with shifts in species composition in a variety of montane vegetation types of North America (including alpine meadow) (Cole 1993). Plant productivity may be more sensitive to grazing pressure than bare soil (Cole et al. 2004), but this measure may be impractical to monitor in Wilderness meadow settings (due to the difficulty of transporting equipment to the field and plant samples to the lab). Furthermore, plant productivity is subject to high interannual variability resulting from climatic factors, such as precipitation (Walker et al. 1994), snowpack, or snowmelt (Walker et al. 1995). In addition to its relevance for monitoring meadow condition, bare soil measured from point data is efficient, objective, easily obtained, and repeatable across time and observers. Therefore, bare soil may be one of the most robust indicators of changes in meadow ecological condition.

Weixelman and Zamudio (2001) generated low, moderate and high ecological condition classes for bare soil cover values based on monitoring data from a comprehensive multi-year study in U.S. Forest Service meadows in the Sierra Nevada (Table 5-5). In their report, ecological condition classes for bare soil values were based on point-intercept data collected from 363 meadows across a broad disturbance gradient (Weixelman and Zamudio 2001). These values were used as a starting point to inform condition class development in Yosemite and are shown here as an example. However, the park will revise these condition

class values based on monitoring data collected in Yosemite (the NPS is currently testing a pilot monitoring protocol for this indicator in Segments 1 and 5). These data will be collected from meadows with visitor and pack stock use as well as meadows with no to low use (reference sites) to detect changes in condition unrelated to direct human use or management actions. Exposed bare soil occurs due to natural phenomena such as wildlife activity, drought, and/or flooding and therefore some background level of bare soil may be expected. The monitoring approach may also include collecting information on meadow characteristics and human use to have an empirical basis for assessing bare soil causal factors. A specific approach would be determined during monitoring design.

TABLE 5-5: BARE SOIL COVER VALUES FOR ECOLOGICAL CONDITION CLASSES AMONG SIERRA NEVADA MEADOW TYPES (FROM WEIXELMAN ET AL. 2003). THESE ARE PROVISIONAL AND WILL BE SUBJECT TO REVISION FOLLOWING FURTHER STUDY IN YOSEMITE MEADOWS.

Meadow type	High Condition	Moderate Condition	Low Condition
Montane			
Hydric meadow	0-4%	5-9%	>9%
Mesic meadow	0-6%	7-13%	>13%
Xeric meadow	0-8%	9-13%	>13%
Subalpine			
Hydric meadow	0-4%	5-8%	>8%
Mesic meadow	0-6%	7-13%	>13%
Xeric meadow	TBD	TBD	TBD
NOTE: The upper montane zone is about 6,000 to 8,000 feet in elevation and the subalpine zone is 8,000 to 9,500 feet in elevation			

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

To meet the management standard for meadow bare soil, at least 75% of sites monitored in the river segment should have bare soil cover values within the range of high ecological condition, and no more than 15% of sites should be in low ecological condition occurring at the individual meadow level for three consecutive years. By including multiple years in this standard, variability due to such non-human influences as drought or increased rodent burrowing can be ruled out for low ecological condition.

Values for bare soil cover that define ecological condition classes vary according to meadow type and elevation (Table 5-5). In this example, to be in a high condition class, a moist (mesic) meadow would not have bare soil exceeding 6% of its surface area, and a wet (hydric) montane meadow (5,000-8,000 feet [1,500-2,400 meters]) would not have bare soil exceeding 4%. Exact range of values for condition classes would be set and adaptively revised for Yosemite based on values obtained through additional data collection. One meadow may contain up to 3 meadow types (wet, moist, and dry), each of which would be sampled as an independent unit (a "site") and its values for condition class applied respectively. In order to determine whether the standard would be met at the segmentwide level, a percentage of sites in each low, moderate and high condition class would be calculated.

The NPS based these management standards on data and recommendations from the U.S. Forest Service Region 5 (California) Range Monitoring Project. This project has been monitoring bare soil in relation to livestock use in Sierra Nevada meadows for 12 years (Weixelman 2009).[22]

Adverse Impact

As noted above, the condition ratings in Weixelman and Zamudio (2001) provide ecologically meaningful ranges for bare ground values that were derived from analyzing meadow data from the Sierra Nevada. This condition class approach provides a way to distinguish adverse impact from minor fluctuations in the amount of bare soil. Using this approach, an adverse impact would occur when at least 40% of the monitoring sites in a river segment have bare soil cover values that are twice the Weixelman et al. (2003) values for low ecological condition for those meadow types. For example, if a river segment contained 50 monitored sites, an adverse impact would be present if there were more than 20 sites with a subalpine wet meadow whose bare soil cover value was greater than 16% (as measured by point-intercept data). The exact range of values for condition classes would be set and adaptively revised for Yosemite based on values obtained through additional data collection.

Increases in bare soil that result in values at double the low condition rating for more than 40% of meadow sites in a river segment would signify a more significant decline than a minor, short-term fluctuation in one meadow. Also, the doubling of bare soil amount provides a means to account for other factors besides packstock use that may be contributing to bare soil levels.

Degradation

Degradation would occur when at least 80% of the monitoring sites in a river segment have bare soil cover values that are twice the Weixelman et al. (2003) values for low ecological condition for those meadow types. For example, if a river segment contained 50 monitored sites, degradation would be present if there were more than 40 sites with a subalpine wet meadow where bare soil cover value was greater than 16% (as measured by point-intercept data). The exact range of values for condition classes would be set and adaptively revised for Yosemite based on values obtained through additional data collection.

The ecological processes that sustain meadows are integrally tied to plant composition, vegetative structure, and soil stability. A meadow in low ecological condition would have a predominance of shallow- and tap-rooted species, lower vegetative cover, and a greater extent of bare soil than a meadow in high condition. High amounts of bare soil indicate low meadow productivity and greater susceptibility to erosion. Bare soil amounts of the magnitude described above, widespread across meadows in a river segment, would likely indicate that the processes sustaining meadow function are in jeopardy within that segment of the Merced River corridor.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Meadow Bare Soil

The NPS is collaborating with the University of California-Berkeley and the University of Arizona to develop a protocol to monitor meadow bare soil cover. Together they completed a draft monitoring protocol and collected pilot data from representative meadow types in summer 2012. They have refined the protocol based on pilot data results and tested the protocol in meadows of concern and reference meadows

[22] There are no known standards for bare soil in published academic literature.

in summer 2013. Additionally, data collected will be used to adapt the ecological condition classes of Weixelman et. al. (2001) to Yosemite National Park.

Monitoring would occur in Segment 1 above Nevada Fall (e.g., Merced Lake, Washburn Lake, Lyell Fork) and in Segment 5 on the South Fork Merced River above Wawona (Moraine Meadow and meadows upstream of Moraine Meadow, for example). The NPS would evaluate meadows of concern as well as reference meadows within Segments 1 and 5. As the protocol develops, specific meadows of concern will be identified for monitoring. Reference sites (meadows with little to no visitor or stock use) will also be monitored as needed to provide a comparison with meadows of concern. Every five years, NPS staff will re-evaluate which meadows in the corridor are in need of monitoring. The NPS would evaluate the effectiveness of the indicators on a regular basis to assure that the combination of these metrics fully protect ORV 1.

The recommended monitoring interval for bare soil is three to five years unless the amount of bare soil reaches a management trigger, prompting an increase in monitoring. A subset of sites may receive annual monitoring to obtain estimates of inter-annual variation. Monitoring may occur any time between meadow flowering and first snowfall. Table 5-6 displays the trigger points at which actions would be taken to maintain meadow condition well above the management standard. These trigger points are focused on both site-level and segmentwide conditions. Responses are taken at the individual meadow level; this is necessary to avoid a downward trend segmentwide that may be difficult to mitigate at that scale.

Management to Protect and Enhance High-Elevation Meadows and Riparian Habitat (Indicator 1, ORV 1)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 1, ORV 1)

In 2010, NPS staff conducted a meadow condition assessment to characterize meadow and riparian conditions throughout the Merced River corridor and identify meaningful indicators and specific areas of concern (Ballenger et al. 2010). This assessment concluded that from a segmentwide perspective, high elevation meadows displayed little to no impacts from visitor use or packstock with the exception of Merced Lake-East Meadow, which had widespread impacts due to packstock use.

The NPS is currently testing site-specific monitoring protocols for bare soil protocol. The pilot testing implemented in 2013 in the Merced Lake area showed that bare soil trigger point 2 had been reached for the current season. However, no other triggers for bare soil, adverse impacts, or degradation were present on a segmentwide scale.

Table 5-7 compares the current condition of bare soil for ORV 1 to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-6: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR HIGH-ELEVATION MEADOWS (BARE SOIL)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Monitoring indicates "low ecological condition" bare soil cover value at any monitored site.	Apply a secondary assessment method for a qualitative evaluation of meadow condition.	Rapid assessments are diagnostic tools that provide standardized, rapid, field-based assessments of the overall condition or functional capacity of meadows. Assessing meadow condition would aid in identifying key stressors that may be affecting meadow condition. Assessment results would assist with interpretation of monitoring results.
	Increase education about Best Management Practices (BMPs) in meadows for all who use them.	Education in maintaining meadow condition would help prevent further increases in bare soil associated with human use.
Trigger Point 2: Monitoring indicates "low ecological condition" bare soil cover value at any monitored site for two successive monitoring periods AND secondary assessment indicates human use is a stressor for both monitoring periods OR less than 80% of monitoring sites within a river segment are rated in "high ecological condition" for bare soil or greater than 10% of sites in "low ecological condition" for bare soil.	Increase education about BMPs in meadows for Wilderness visitors, park staff, and park partners.	Education in maintaining meadow condition would help prevent further increases in bare soil associated with human use.
	Work with stakeholders to reduce grazing capacity or timing of use if needed to minimize impacts. Work with stakeholders to adjust use levels annually.	Determining effective strategies with stakeholders for managing meadow use is a necessary step in the process to protect and enhance meadow condition. Grazing capacities constitute use levels that can be sustained in a meadow based on available forage cover, productivity and site condition, which can guide in setting an appropriate level of use.
	Increase monitoring frequency to annually for 5 years.	Frequent monitoring would help facilitate more rapid detection of, and management response to, changes in ecological condition. Its utility would be to evaluate the effectiveness of changes in the intensity and/or timing of use on meadow condition.
	Rest the meadow if necessary. Temporarily discontinue grazing until conditions improve based on secondary assessment results.	Allowing a period of meadow "rest" (removing stresses from grazing and/or trampling) facilitates meadow recovery. Effects of trampling and grazing that are expected to decline with reduced use or avoidance of early-season use include soil compaction, bare ground exposure, and plant disturbance.
Trigger Point 3: Bare soil is double the value of "low ecological condition" class at a site OR previous management actions (such as reduction in use) have been ineffective OR assessments for 5 years have not shown improvement in ecological condition.	Discontinue grazing until conditions improve based on bare soil monitoring.	Allowing a period of meadow "rest" (removing stresses from grazing and/or trampling) facilitates meadow recovery. Effects of trampling and grazing that are expected to decline with reduced use or avoidance of early-season use include soil compaction, bare ground exposure, and plant disturbance

TABLE 5-7: CURRENT CONDITION OF HIGH-ELEVATION MEADOWS, BARE SOIL INDICATOR

Metric	Current Conditions
Meets management standard: At least 75% of sites monitored in the river segment should have bare soil cover values within the range of "high ecological condition," and no more than 15% of sites in "low ecological condition" occurring at the individual meadow level for three consecutive years.	Pilot testing of this indicator's protocols in 2013 suggests that the meadows meet the management standard.
Management concern present: "Low ecological condition" bare soil cover value at any monitored site.	Merced Lake-East Meadow has tripped trigger point 1 and is in "low ecological condition."
Adverse impact: At least 40% of the monitoring sites in a river segment have bare soil cover values that are twice the Weixelman et al. (2003) values for "low ecological condition" for those meadow types.	None present.
Degradation: At least 80% of the monitoring sites in a river segment have bare soil cover values that are twice the Weixelman et al. (2003) values for "low ecological condition" for those meadow types.	

Management Concerns and Actions to Protect River Values (Indicator 1, ORV 1)

As noted above, bare soil trigger point 2 was reached for the Merced Lake-East Meadow. To bring the ORV back to the management standard, NPS will do the following:

- Establish a maximum grazing capacity of 58 stock nights annually in Merced Lake-East Meadow and require stock users to pack in pellet feed for any additional stock nights,
- Implement seasonal closures of the wet portion of the meadow to allow for recovery and exclude stock grazing, and
- Reevaluate stock grazing capacity once the meadow has recovered.

Indicator 2 – Meadow Fragmentation Due to Proliferation of Informal Trails for ORV 1

Indicator Description

This indicator measures fragmentation of high elevation meadow habitat due to the proliferation of informal trails.[23] Informal trails (or social trails) are tracks created by visitors or administrative users that are noticeable to observers and generally not managed directly by park staff, as opposed to formal trails that are mapped, periodically assessed, and regularly maintained (Leung et al. 2002, 2011b). Various informal trail metrics have been commonly used as indicators of visitor-caused impacts throughout federal land management agencies, including other parks like Mount Rainier and Acadia (Kim and Daigle 2011; Rochefort and Swinney 2000; Leung et al. 2011b; Monz and Leung 2006). Monitoring (and preventing) informal trails is especially appropriate in subalpine environments because recovery rates are very slow in such environments (Eagan et al. 2004; Kim and Daigle 2011). The NPS selected this indicator for this ORV because it is quite sensitive in detecting spatial changes and thus is useful to park managers in protecting meadows in an intact condition.

Informal trails have many deleterious ripple effects in natural systems. Research within high elevation meadow environments has demonstrated that trails can have sizeable impacts radiating from the trail's edge into the meadow (Holmquist 2004), an effect also seen in non-meadow habitats (within one to three meters of the informal trail) (Dawson et al. 1974; Dale and Weaver 1974; Leung et al. 2011c). Fragmentation has

[23] The NPS will also use this indicator to monitor meadow conditions in Yosemite Valley as described under ORV 2.

further effects on meadow hydrology, habitat quality, and soil moisture, and creates conditions ideal for the introduction of non-native species (Forman 1995; Leung et al. 2011c; Lindenmayer and Fischer 2006). Finally, trail corridors have also been shown to pose barriers for small mammals and other wildlife (Knight 2000; Miller et al. 1998; Gaines et al. 2003). Indeed, researchers investigating trampling impacts in Yosemite Valley meadows have found that meadow condition is frequently poor in heavily used areas, smaller areas are more prone to difficulties with recovery than larger areas, and visitor-created trampling has a significantly negative impact on vegetation and macroinvertebrate structure and diversity (Kutiel 1999; White et al. 2011; Wimpey and Marion 2011; Holmquist 2004; Leung et al. 2011a, 2011b; Holmquist and Schmidt-Gengenbach 2008; Foin et al. 1977).

A fragmentation measure known as the Largest Patches Index –5 (LPI_5) will be used to measure level of fragmentation. Adapted from the concept of Largest Patch Index (McGarigal and Marks 1995), this index is derived from the sum of the areas of the five largest patches without informal trails in a given meadow, divided by the total landscape (meadow) area and then multiplied by 100. This index is also weighted using a factor derived from the size of the meadow in relation to its area across the entire meadow complex of the river segment. The resulting number (a percentage) indicates the extent to which the meadow area is divided (fragmented) owing to the existence of visitor-created trails. If no trails are present, the total index value would be 100%. The main purpose of grouping the five largest patches, instead of evaluating the single largest patch, is to reduce the index's over-sensitivity to changes in one single patch. Just as parks such as Mount Rainier have found variations of this metric best suited to their meadow system (Moskal and Halabisky 2010), Yosemite park staff and collaborators also considered the three largest and 10 largest patches (LPI3, LPI10), ultimately determining that five best achieved a balance between simplicity and representativeness for Yosemite's meadows. In combination with the bare meadow soil and streambank stability indicators, the NPS will have an excellent picture at any time of the health of the Merced River corridor's high elevation meadows, and (as specified below) will be able to utilize this information to protect those meadows from the variety of uses in Yosemite National Park.

Definitions of Management Standard, Adverse Impact, and Degradation

This standard is based on data from meadows throughout Yosemite (not just those in the Merced River corridor) that experience elevated visitation levels, reduced vegetation cover, and an increased occurrence of invasive species. As there are no specific standards established for this metric in the literature, two information sources provided guidance in determining the appropriate standard for meadow fragmentation in the Merced River Corridor. The first source shows results from on-the-ground monitoring of meadows in both the Merced and Tuolumne river corridors (since 2008). Meadows found to exhibit LPI_5 values below 90% were meadows with restoration needs and potential threats to biodiversity, soil erosion, and increased fragmentation. Conversely, meadows that were fully protective of species biodiversity, overall ecological integrity, and meadow hydrology (the fundamental components of this ORV) had a higher fragmentation standard, 93%. Second, a GIS analysis indicated the range of LPI_5 values expected to be found after management actions outlined in this plan are implemented. Another part of this second analysis was to consider the potential *impacts* that could occur alongside all of the proposed *actions* in the plan, such as expanding a campground next to a meadow. This second, two-pronged analysis determined that the fragmentation level (the LPI_5) would be the average of 93% for a segment. Through these two analyses, then, park managers determined that the meadow fragmentation management standard of 93% would both protect this ORV and be attainable for Yosemite meadows.

Management Standard

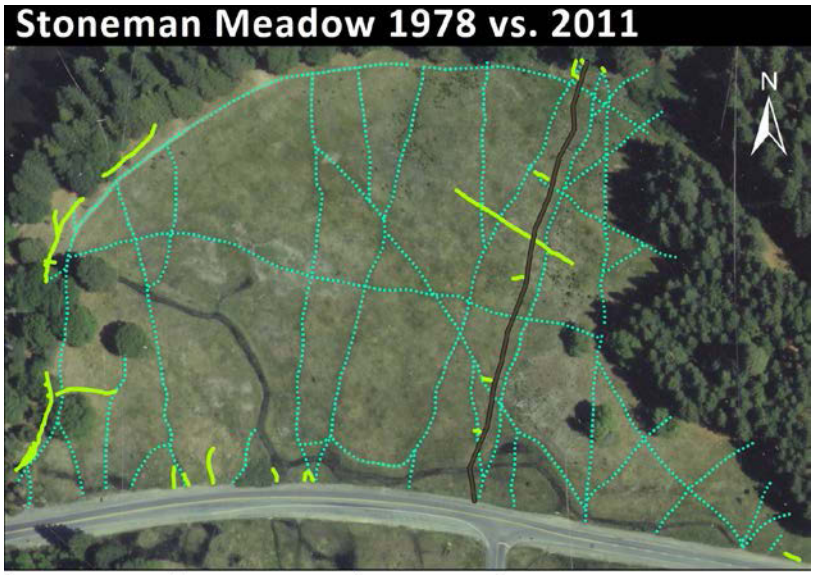
To meet the management standard (for the upper montane and subalpine meadow complexes in Segments 1 and 5, and also for ORV 2 in Segment 2), the weighted average of the LPI_5 indexes for all selected meadows within the segment must be greater than or equal to 93%, with no individual meadow less than 90%. The weighted values are selected by determining each individual meadow size relative to the total meadow area within each segment. Because the overall size of the meadow complex is a key component of the meadow ORV, using a weighted average ensures protection for the integrity and overall extent of individual meadows and the full complex within each segment.

Adverse Impact

An adverse impact would occur when the weighted average of the LPI_5 indices for all meadows within a river segment has dropped below 81% for three consecutive years of annual assessments despite management actions to improve the connectivity and overall health of the meadow. Because precipitation in the Sierra Nevada varies widely year to year and is directly linked to meadow condition, specific annual precipitation patterns would be evaluated to ensure that the sampling interval reflects impacts caused by visitors as opposed to natural causes.

Informal trails and reduced patch sizes in meadows have been shown to be associated with reduced total vegetation, increased bare ground cover and an increased presence of non-native plants (Leung et al. 2011b). The value chosen to represent adverse impacts reflects conditions found in individual meadows (in both Yosemite Valley and Tuolumne Meadows) identified by park staff, managers, and subject matter experts as needing significant restoration actions due to widespread trailing networks and associated trampling and bare ground. These meadows should demonstrate accelerated recovery rates and good response to restoration once actions are taken (NPS 2009).

Figure 5-1: Informal Trails in Stoneman Meadow in 1978 and 2011



Trail Symbol	Total length of trails	LPI-5 Value
1978	3170 meters	40.40
2011	327 meters	99.12

Current Boardwalk

0 25 50 100 m

These 1978 informal trail values were determined based on the presence of trails in this aerial photograph from the Yosemite Archives. For LPI-5 values, all 1978 trails were given a default trail width of 12".

Degradation

Degradation would occur when fragmentation resulting from informal trailing results in a weighted average LPI_5 index of 40% or less from all meadows within a river segment (again, in Segments 1, 2, and 5).

Using archival aerial photographs, NPS staff were able to simulate historic meadow conditions in Stoneman Meadow in 1978. As shown in Figure 5-1, this analysis revealed

that an LPI_5 index of 40% existed prior to intensive restoration efforts. Although this meadow has shown evidence of recovery in recent years, the recovery was only the result of intensive restoration efforts, significant financial investment, and several years of planning. These past conditions in Stoneman Meadow represent meadow conditions that park managers and scientists feel best represent degradation for meadows in Yosemite, in montane, subalpine, and alpine meadows. Current conditions in Stoneman Meadow demonstrate the potential for recovery that is possible through intensive restoration efforts.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Meadow Fragmentation Due to the Proliferation of Informal Trails

All meadows within a segment will be evaluated for potential monitoring, with all meadows selected for monitoring evaluated using a complete set of measures reflecting extent, proliferation, and condition of trails and disturbed areas (Leung et al. 2011b). All meadows with a high potential for visitor-created impacts would be monitored on a three-year basis or at a maximum of five years. Meadows without evidence of visitor impacts, as reflected in the baseline conditions report, will be periodically evaluated until evidence suggests more intensive monitoring is necessary. Monitoring would take place during the middle of the growing season before plant senescence (the final stage in the life cycle of a plant). The Visitor Use and Impact Monitoring Field Guide (2010) provides more details on data collection, identification of informal trails and a training program for technicians in order to ensure data are collected effectively and consistently for the life of the program.

Table 5-8 depicts measures that would trigger management response.

TABLE 5-8: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR HIGH-ELEVATION MEADOWS (MEADOW FRAGMENTATION)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: A one-year decrease in the LPI_5 index below 93% at the level of an individual meadow.	• Increase meadow monitoring assessments to one-year interval at each individual meadow that surpasses this value. Target the largest patches in meadow, and analyze trail condition and emergence of new trails. • Increase enforcement and education of best management practices in meadows. • Implement restoration practices, including visitor messaging, restoration signs after Wilderness Minimum Requirement Analysis, delineation of trails determined to be less disturbing to meadow ecology, and closure of informal trails.	This action allows increased sensitivity to changes in trails, and would allow managers better opportunities to identify meadows of consideration, and take actions well before adverse impacts are incurred. With more frequent assessment, emerging trails and particularly problematic trails would be identified and restoration actions taken.

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 2: Data analyses from annual fragmentation monitoring yield an LPI_5 value of less than 93% for three consecutive years in an individual meadow OR a decrease below 90% at the level of an individual meadow for one summer.	Further restoration of disturbed areas and informal trails in specific meadows that exceed trigger. Depending on the degree and extent of impacts, the NPS would take some or all of the following actions: • Use boardwalks or hardened surfaces to allow access to sensitive areas. • Delineate trails through upland areas and along meadow perimeters to allow access while reducing fragmentation and meadow impacts. • Place restoration closure signs, and/or outside Wilderness, fence meadow perimeters. Within Wilderness, fence meadow perimeters if deemed appropriate after a Wilderness Minimum Requirement Analysis. • De-compact trampled soils. • Salvage plants growing in trail ruts and use as part of re-vegetation to consolidate multiple parallel trails. • Re-contour topography. • Scatter locally gathered seed and organic materials to facilitate new plant growth. • Fill deep headcuts caused by informal trails with native soil and re-contour to natural meadow topography. • Institute closures in individual impacted meadows, and increase visitor education associated with the closures.	This value represents the level at which a group of subject matter experts determined meadows to be threatening resource protection and quality of visitor experience.

Management to Protect and Enhance High-Elevation Meadows and Riparian Habitat (Indicator 2, ORV 1)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 2, ORV 1)

NPS has begun collecting data with newly developed monitoring protocols for 2012 and 2013 for meadow fragmentation. After evaluating 2013 data according to specific standards, park managers will assess whether the subalpine meadow fragmentation meets the management standard or if this ORV is sustaining adverse impacts or degradation. Once this assessment has been done, NPS will take management action if needed as prescribed in Table 5-6, above.

Table 5-9 compares the current condition of meadow fragmentation for ORV 1 to the definitions of management standard, adverse impact, degradation, and management concern.

Management Concerns and Actions to Protect River Values (Indicator 2, ORV 1)

The NPS is currently compiling and analyzing meadow fragmentation monitoring data from 2013. A determination of whether management concerns, adverse impacts, or degradation is present will be made when this analysis is complete. However, because a trigger has been tripped under the bare soil indicator (as discussed above), ORV 1 has a management concern present (see the bare soil discussion for the action NPS will take to address this concern—establishing a grazing capacity for this meadow).

TABLE 5-9: CURRENT CONDITION OF HIGH-ELEVATION MEADOW AND RIPARIAN COMPLEX BASED ON MONITORING OF LARGEST PATCH INDEX-5 (LPI_5)

Metric	Current Conditions
Meets management standard: LPI_5 is greater than 93% of weighted average value of the meadows in a river segment, with no individual meadow less than 90%.	Data were collected during 2013 and are still being evaluated. After evaluating these data, park managers will assess whether the subalpine meadow fragmentation meets the management standard for this ORV.
Management concern present: LPI_5 is below 93% for any individual meadow (trigger 1) or the annual LPI5 index is below 90%, or below 93% for three consecutive years, again for an individual meadow (trigger 2).	
Adverse impact: The weighted average LPI_5 value is below 81% for all the meadows in a river segment for three consecutive years.	
Degradation: The weighted average LPI_5 value is below 40% for all the meadows in a river segment.	
NOTE: [a] LPI5 is a percentage of the weighted average value of all the meadows in a river segment.	

Indicator 3 – Streambank Stability for ORV 1

Indicator Description

Riparian streambanks have been described as transitional areas between aquatic and terrestrial systems (Bohn 1986; Gregory et al. 1991), where the interchange among ground and surface water hydrologic processes are evident. In meadow systems, streambank conditions exhibit the balance between the hydraulic forces of fluvial surface water, subsurface pore pressure (i.e., lateral flow of groundwater input to the channel, infiltration, etc.), soil particle cohesion, and binding properties associated with roots of riparian vegetation (Micheli and Kirchner 2002). Streambank stability has been widely identified as a factor affecting the geomorphic function of stream channels (Kondolf et al. 1996; Kattelmann and Embury 1996; Madej et al. 1994; Kauffman et al. 1997).

Impacts on streambank stability can result from multiple causal mechanisms, including both anthropogenic (human-related) and natural sources that alter sediment-discharge balance (Kondolf et al. 1996), or cumulative impacts from both source types (Allen-Diaz et al. 1999). Meadows and riparian areas are a primary focus for visitor use. Examples of anthropogenic activities and their impacts that contribute to destabilization of streambanks (hereafter, streambank alteration) include the following:

- human foot traffic (bank shear, compaction, vegetation trampling, loss of vegetative roots, or loss of woody riparian vegetation)
- stock use (hoofpunching, bank shear, soil compaction, vegetation trampling, vegetation removal from grazing)
- road/trail construction and/or informal trailing (soil compaction, decreased sheet flow, reduced infiltration/percolation, increased surface routing and flow velocities, vegetation composition changes)

Natural processes associated with channel migration or evolution to a new dynamic equilibrium can also be manifested as instability. Examples of these processes are substantial flood events, or other large-scale events such as wildfires and/or landslides, within the contributing watershed.

For this component of the Biological ORV, the indicator is streambank stability ratings. Values used for the trigger point, management standard, adverse impacts, and degradation will be determined by the percent of

plots determined as "stable" at the scale of the monitoring locations or river segment (see detailed descriptions for each standard, below). Streambank stability ratings involve a trained technician assessing three factors at a number of plots at one location, then averaging those rankings for the location. The three factors are streambank type (erosional or depositional [i.e. outside or inside of meanders]), vegetation cover (covered or uncovered), and evidence of erosional features (block, slump, slough, active, or absent) (Frazier et al. 2005; Burton et al. 2011). Plots are ranked as either stable or unstable, with stable plots being those that have the specified combination of these three factors that signify stability. Results of quality control tests conducted by Archer and others (2004) demonstrated that streambank stability ratings had generally low coefficients of variation, were repeatable, and were consistent among different observers (especially when ratings were done dichotomously—either stable or unstable).

Streambank stability is a fundamental component of riparian and meadow condition and function over time. Low ratings for streambank stability could be indicative of reduced system function and diminished biological integrity of riparian areas and suggest a need for focused monitoring and possible management actions. Long-term monitoring data on streambank stability conditions can be used to indicate whether, and how well, management objectives are being achieved. Follow-up focused monitoring at sites with low stability ratings would include intensive hydrologic assessments of the site and contributing watershed, such that the principal causes of instability could be discerned. Beyond focused monitoring, additional management actions could be taken to restore or mitigate low stability due to levels of streambank alteration.

Definitions of Management Standard, Adverse Impact, and Degradation

Standards for streambank stability have been reported in published literature from various survey protocols, including the Pfankuch-Rosgen *channel stability assessment* (Rosgen 2001), the *stream condition inventory* (Frazier et al. 2005), and *multiple indicator monitoring* (Burton et al. 2011). Yosemite resource experts considered each protocol and corresponding optimal value for streambank stability ratings in determining the management standard, adverse impact, and degradation for this indicator. Ultimately, the NPS approach to determining values for these standards is blended from two protocols, *multiple indicator monitoring* (Burton et al. 2011) and *stream condition inventory* (Frazier et al. 2005). These two protocols both assess streambank stability similarly, with the MIM protocol providing estimates of sample variance (i.e., confidence intervals) and the SCI protocol providing recommended standards for reference and managed reaches. The third published protocol for assessment of streambank stability, the *channel stability assessment* (Rosgen 2001), is not currently feasible given fiscal and staffing constraints for long-term monitoring, though it may be appropriate as a hydrologic assessment tool for follow-up monitoring for sites that reach the trigger point value.

The standards described below accommodate a given level of instability due to natural processes, but are consistent with mean values reported by Frazier et al. (2005) for reference streams (75% stable, n = 18) and managed streams (50% stable, n = 25) in the Sierra Nevada.

The standards are described hierarchically—in terms of increasing spatial and/or temporal scale, with the management standard determined at the monitoring location (a designated monitoring area) scale, while adverse impact and degradation are determined at the scale of each river segment. This hierarchical distinction is consistent with the river discontinuum and continuum concepts, which infer that each river segment is comprised of individual components (Poole 2002) that collectively function as an interconnected riverine system (Vannote et al. 1980; Rosgen 1996). In addition, degradation incorporates temporal scale, where this standard is exceeded if streambank stability conditions have not recovered to above the management standard over two monitoring years.

Management Standard

The management standard for the maintenance of stable streambanks is that at least half (50%) of all streambank stability rankings at each individual monitoring location must be stable in any given year.[24] This management standard allows for some streambank instability due to either anthropogenic causes and/or dynamic processes (channel migration, erosion, and deposition) fundamental to hydrologic function of fluvial river systems (as explained above) while still requiring at least half of all streambanks—amounts similar to those commonly found on unaltered streambanks—to be stable. Monitoring locations are specific, established places, chosen according to accepted criteria, within the three river segments in which portions of the subalpine meadow and riparian complex occur. The monitoring locations are regularly monitored according to the schedule specified in the "Monitoring Program" section below.

Adverse Impact

Based on available scientific knowledge and professional judgment, an adverse impact would occur when less than half (<50%) of all streambank stability rankings are stable, averaged across all monitoring locations within a river segment for any single monitoring year, after restoration or use restrictions have been implemented (as outlined in Table 5-10 below).[25] Potential adverse impacts may also be realized when a statistical trend is observed where the percent of stable streambank stability ratings in a segment is likely to drop below 50% in subsequent monitoring years without intervening management action.

Degradation

Based on available scientific knowledge and professional judgment, degradation would occur when less than half (<50%) of all streambank stability rankings are stable, averaged across all monitoring locations within a river segment for at least two consecutive monitoring years, after restoration or use restrictions have been implemented (again as outlined in Table 5-10 below).[26]

Ultimately, negative consequences of channel instability could be associated with land productivity change, land loss, aquatic habitat deterioration, changes in both short- and long-term channel evolution, and loss of physical and biological function (Rosgen 2001). Extensive or severely degraded streambank stability conditions, manifested from either anthropogenic or natural sources, would likely propagate the loss of functional integrity of the stream channel on site and downstream. Realization of degradation would be indicative of the need for substantial restoration investment.

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[24] There exists an inherent level of uncertainty in efforts to quantifiably measure changes in streambank stability conditions, based on variability in observers, as well as variation within, and between, sites (Archer et al. 2004). Confidence limits developed from monitoring data would facilitate a given level of certainty (i.e., 95% or 90% confidence) for comparison of the mean of the observed values with the management standard. Burton and others (2011) reported the width of confidence intervals as 5.2 percent at 95% confidence from repeat surveys of streambank stability at 89 sites. This indicator will use 5% (rounded down from 5.2%) as the confidence interval until a Yosemite-specific confidence interval can be determined. The 5% value is both added to and subtracted from results to produce the confidence interval.

Breach of the management standard will be determined by comparing it to the value of the upper confidence limit for the average of the observed data. The results are then compared to the 50% management standard. For example, a location with an average of 46% of its plots as stable would have a 95% confidence interval of 41 to 51%. The upper confidence limit—51%--is used for comparison; because it exceeds 50%, this location would be within the management standard.

[25] Again, the upper confidence limit provides the basis for comparison. For example, a location whose plots averaged 44% stable would be classified as having an adverse impact, because the upper confidence limit (49%) would be less than 50%.

[26] Again, the upper confidence limit provides the basis for comparison.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Streambank Stability

As required by the guidelines implementing WSRA, the NPS will conduct a program of monitoring and ongoing study during and following the implementation of the plan to ensure that river values are enhanced where necessary and protected throughout the life of the plan.

Streambank stability monitoring is a long-term indicator and can be effectively monitored on a three- to five- year interval (see Kershner et al. 2004; Burton et al. 2011); whereas, streambank alteration is a short-term indicator that should be monitored annually (see Burton et al. 2011). Streambank stability and streambank alteration will be assessed by trained personnel after the majority of use has occurred for that year, typically September or October. Monitoring locations will be selected according to the site selection criteria of the chosen protocol. Monitoring sites have been established within the river segment 1 including Doc Moyle's East, Triple Peak, Turner Lake, and Red Peak sites. Additional sites may be established within the Merced Peak drainage, and paired reference sites will be established, as available, especially where sites are near or below the trigger value.

Existing conditions for streambank stability will be established through data collection the first year of plan implementation; subsequent evaluation of streambank stability conditions will be conducted on a three- to five- year monitoring interval, thereafter. If either trigger in Table 5-10 is reached, the NPS will undertake detailed annual assessments to evaluate the level of streambank alteration at that site. Annual assessments of alteration will provide data on the level, location, and distribution of use, and will facilitate inference on the degree to which use is affecting streambank stability. Concurrently, the NPS will assess hydrologic conditions within the contributing source area for that monitoring site to identify potential anomalies (i.e., excessive alteration at areas upstream of the monitoring site, or the occurrence of natural events, such as landslides or wildfires) as sources of site instability. Results from a wide suite of metrics—stream monitoring data (i.e. the comprehensive MIM protocol, including streambank stability), follow-up hydrologic assessments, and available data from additional sources such as visitor use data—would be used to inform and help prioritize subsequent actions necessary for site recovery.

For streambank stability, action would be triggered when less than 75% of plots at any monitoring location are ranked as stable (see Table 5-10). Action will also be triggered when a statistical trend is observed indicating that the percent of plots at a monitoring location rated as stable is likely to drop below 75% in subsequent monitoring years, without intervening management action. Management actions to facilitate site recovery could restrict the use of riparian habitats by a combination of exclosures (access restriction), rest (temporary restriction of specific use types), and/or site restoration. The duration of use-restriction will be dependent on the rates of recovery of streambank stability and could be short or long term. Effectiveness monitoring will be initiated if management actions to restrict use levels are implemented.

TABLE 5-10: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR HIGH-ELEVATION RIPARIAN HABITAT (STREAMBANK STABILITY)

Trigger Point at Which Management Action Would Be Taken	Required Management Actions (at least one action will be taken)	Rationale for Management Actions
Trigger Point: The percent of plots at any monitoring location rated as stable declines to less than 75% OR a statistical trend is observed indicating that the percent of plots at a monitoring location rated as stable is likely to drop below 75% in subsequent monitoring years, without intervening management action.	Depending on the degree and extent of impacts, the NPS would take some or all of the following actions: • Assess streambank alteration at impacted sites. • Conduct hydrologic assessments of the contributing source area for that site. • Implement actions to facilitate site recovery through restoration and/or use restriction (i.e. resource exclosures, site rest, and so on). • Implement use-restriction actions (such as reducing overall use) if streambank alteration or other anthropogenic activities are identified as causal mechanisms of instability. • Increase monitoring frequency to evaluate effectiveness and recovery to the management standard, and compare to reference site conditions as available.	Assessments will refine understanding of baseline conditions and the causes (streambank alteration, natural processes, or cumulative effects) affecting streambank stability, on-site and within the greater contributing source area for that monitoring site. Identifying land use practices that are the most damaging to ecosystems or that prevent recovery is essential for restoration (National Research Council 1992). Comparison of site conditions to reference sites will validate observed conditions and recovery.

Management to Protect and Enhance High-Elevation Meadows and Riparian Habitat (Indicator 3, ORV 1)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 3, ORV 1)

As noted above under "Monitoring Protocols," existing conditions for this indicator have not yet been recorded; these will be established through data collection the first year of plan implementation, at which point a determination will be possible as to whether this ORV is within the management standard or sustaining adverse impacts or degradation. After evaluating that baseline data according to the specific standards for the three meadow/riparian indicators, NPS will take management action if needed as prescribed in Table 5-10, above.

Table 5-11 compares the current condition of streambank stability for ORV 1 to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-11: STREAMBANK STABILITY RATINGS BY MONITORING SITE AND SEGMENT AVERAGES

Metric	Current Conditions
Meets management standard: At least half (50%) of all streambank stability rankings at each individual monitoring location must be stable.	Baseline conditions for this indicator have not yet been recorded; these will be established through data collection during the first year of plan implementation.
Management concern present: Less than 75% of all streambank stability rankings at an individual monitoring location are stable.	
Adverse impact: Average streambank stability rating below 50% averaged across all monitoring sites within a river segment for any single monitoring year.	
Degradation: Average streambank stability rating below 50% across all river segments for at least two consecutive monitoring years.	

Management Concerns and Protective Actions (Indicator 3, ORV 1)

The NPS is currently compiling and analyzing streambank stability monitoring data from 2013. A determination of whether management concerns, adverse impacts, or degradation is present will be made when this analysis is complete. However, because a trigger has been tripped under the bare soil indicator (as discussed above), ORV 1 has a management concern present (see the bare soil discussion for the action NPS will take to address this concern—establishing a grazing capacity for this meadow).

Localized Concerns and Enhancement Actions (ORV 1)

Several localized concerns for this ORV exist at Merced Lake-East Meadow, Triple Peak Fork Meadow, wetlands near Echo Valley and Merced Lake shore, and mineral springs between Merced Lake and Washburn Lake. To address these localized concerns, the alternatives in Chapter 8 would all remove informal trails that incise meadow habitat, trails in wet and/or sensitive vegetation, and trails that fragment meadow habitat, including trails in the areas mentioned above and other areas as necessary.

Conclusion: Protecting and Enhancing Biological ORV 1 (High-Elevation Meadows and Riparian Habitat)

Using the monitoring information from 2012 and 2013, the NPS will report baseline data for all three indicators. This data will be used to confirm the presence or absence of adverse impacts, degradation, or management concerns based on the identified standards.

The NPS has already determined that a management concern regarding bare soil exists and that protective action is required for Merced Lake East Meadow. As a result, this management action has been included in each of the action alternatives in Chapter 8. The *Final Merced River Plan/EIS* proposes additional actions to enhance Biological ORV 1 conditions in "Alternatives" (Chapter 8). To ensure this ORV is protected through time, the NPS will continue to monitor three indicators to assess the condition of the ORV. Monitoring these indicators, in association with the identified trigger points, will provide early warning of conditions that require management action before adverse impacts or degradation occur. The indicators link to triggers that initiate specific management responses.

Biological ORV 2—Mid-Elevation Meadows and Riparian Habitat

ORV 2—The meadows and riparian communities of Yosemite Valley comprise one of the largest mid-elevation meadow-riparian complexes in the Sierra Nevada.
Location: Segments 2A and 2B (Yosemite Valley)
Rationale: The large, moist mid-elevation meadows and the riparian vegetation communities of Yosemite Valley owe their existence to river processes that produce regular flooding and sustain high water tables, and past burning by American Indians and current prescribed burns that maintain open conditions for meadows. Yosemite Valley meadows and riparian habitats support rare and endemic species as well as an exemplary diversity of plant and animal species found in a variety of ecological niches.
Management Objective: The NPS would manage public use of meadows and riparian zones within the Merced River corridor to minimize habitat fragmentation, maintain high ecological condition, and protect the integrity of streambanks to conserve ecosystem processes associated with meadow hydrologic and ecological function.

Condition Assessment

Historic ORV Conditions

Given the rich history of development in Yosemite Valley, this section highlights how this history has impacted Valley mid-elevation meadows and riparian habitat over the years. It is widely acknowledged that there have been significant changes in the vegetation composition of Yosemite Valley since 1851, particularly with regard to increase in extent/density of conifers and reduction of meadow extent. While some scientific studies have shown natural factors contributing to these changes, it is most likely a combination of human induced and natural changes, such as cessation of burning by American Indians, altered hydrology, domestic livestock grazing, public use of the meadows, wildlife herbivory, natural succession, and climate change.

American Indians strongly influenced the vegetation of Yosemite Valley (Gibbens and Heady 1964; Heady and Zinke 1978; Anderson 2005). Gibbens and Heady (1964) found that Yosemite Valley was forested prior to the arrival of American Indians, noting that American Indians controlled brush and tree growth in the Valley, keeping vegetation at the stage best suited to their needs. Indians largely accomplished this goal through the use of fire (Ernst 1943; Greene 1987; Reynolds 1959; Anderson and Carpenter 1991; Taylor 2006). California Indians conducted small, low-intensity surface fires for centuries to increase growth and yield of crops, aid in hunting and insect collection, and perform other functions (Gassoway 2007). The Euro-American settlers essentially eliminated anthropogenic fire from the Valley in the 1850s. Elimination of fire had immediate effects, with a widespread establishment of trees in and around the meadows taking place after 1860 (Gibbens and Heady 1964). Plowing, mowing, burning, and probably in some cases severe overgrazing, complicated the increase in tree cover to varying degrees, as did the clearing activities of the 1890s, 1930s and 1940s. Nonetheless, a substantial reduction in the size of the meadows was becoming evident by the time Gibbens and Heady did their work.

Through time, many park managers took action to control conifer encroachment in meadows. Galen Clark initiated the first post-contact conifer thinning in Yosemite Valley in the early 1890s (Clark 1894). Conifer clearing continued in the campgrounds and in El Capitan Meadow in 1919 (Greene 1987). Emil Ernst, Yosemite Park Ranger/Forester in the 1930-1950s, championed and conducted large efforts to control conifer encroachment. Efforts to control conifer encroachment with prescribed burning began in 1970.

Alterations in meadow hydrology, almost always making meadows drier, have had an equally altering effect. Anthropogenic impacts to hydrologic flows in Yosemite Valley were both purposeful and inadvertent. For example, in 1879 Galen Clark, Guardian of the Yosemite Grant, used blasting methods to lower the level of the terminal moraine located just downstream of El Capitan Meadow in an effort to drain upstream meadows and enhance access to east Yosemite Valley (Milestone 1978). This action likely dropped the water table in El Capitan Meadow, making it more conducive for tree establishment. Ditching done to drain the meadows had the same drying effect, with roads built across meadows exacerbating the hydrological alterations (Madej et al. 1994; Milestone 1978; Cooper et al. 2008). Most Merced River tributaries in Yosemite Valley were also channelized in part (Milestone 1978), altering the path of water that would naturally flow from cliff walls in a sheet or braided fashion across the meadows.

Historic impacts on riparian communities were also widespread. Madej (1994) reviewed historic photographs and documents related to the Merced River channel and found “banks were well vegetated, except on the outside of meander bends or where humans had already concentrated their activities. Riparian vegetation was typically dense and vigorous.” By the late 1970s, there were over 4,000 meters of

riprap revetment placed along the banks of Yosemite Valley streams (Milestone 1978; Cardno-ENTRIX 2012). Madej (1994) documented severe riverbank erosion in specific areas, particularly in sites in proximity to development. There was a strong relationship to accelerated erosion and a lack of riparian vegetation.

Several authors (Heady and Zinke 1978; Anderson and Carpenter 1991; Taylor 2006) since have refined these conclusions, but the fundamental conclusion—that Yosemite Valley meadows have shrunk in size in the historic era—remains.

ORV Condition at the Time of Designation (1987)

By the time of designation, the NPS had several fundamental programs and projects in place to address the vegetation changes in Yosemite Valley and to improve the integrity of remaining meadows. Notably, the NPS systematically reintroduced fire into Yosemite Valley meadows. Park staff and volunteers also removed tens of thousands of conifer seedlings and saplings from Yosemite Valley meadows since the time of designation (Ballenger et al. 2011). These practices kept encroaching conifers at bay in many Yosemite Valley meadows. These actions were intended to restore the open scenery and cultural landscape that was changed by the cessation of burning by American Indians beginning about 1850, and counter human-initiated changes in hydrologic processes and topography that channelized sheet flow in meadows.

In 1987, riparian areas along the banks of the Merced River in Yosemite Valley demonstrated substantial impacts including erosion, denuded riparian vegetation, and poorly designed riprap revetment (Tucker 1996; Cardno ENTRIX 2012). Madej et al. (1991) found a strong association among levels of human use around campsites and river access points, and loss of riparian cover leading to accelerated bank erosion. Trampled soils with denuded vegetation in the developed, high-use areas of east Yosemite Valley (e.g., Upper Pines, Lower Pines, and North Pines Campgrounds) exposed highly erodible soils on the riverbanks that were vulnerable to accelerated erosion. This condition contributed to substantial widening of the river in some reaches (Madej et al. 1991). The potential effects of denuded riparian vegetation on the riverbanks include lack of shading and altered nutrient dynamics in aquatic habitats, reduced riparian habitat for wildlife, increased water temperature, increased suspended sediment, and reduced dissolved oxygen levels (Madej et al. 1994). Other areas in Yosemite Valley exhibited extensive trampling from visitor use and a subsequent decrease in riparian vegetation including the former El Capitan Picnic Area, the Lower River Campground/Housekeeping Camp area, Devil's Elbow, and North Pines Campground.

In summary, the impacts to the Merced River in East Yosemite Valley due to vegetation loss and the systematic removal of large wood from the channel have been significant, and likely irreversible. In fact, two of the scientists to examine Yosemite Valley meadows concluded, "So much alteration of the meadows has occurred that they can no longer be restored to their primitive state" (Heady and Zinke 1978:20). The extent to which this change should be considered adverse is unclear; both Gibbens and Heady (1964) and Heady and Zinke (1978) argued that meadows largely exist and persist because of human intervention. To perpetuate meadows, perpetual management intervention will be required.

Current ORV Condition

The effects of the actions discussed above, taking place over more than a century, are that an estimated 64% of the original meadow (and open forest) habitat in Yosemite Valley has converted to forest since the mid-1800s (Ballenger et al. 2011). While most meadow loss occurred prior to the 1940s (NPS 1997 Parkwide Vegetation Map; NPS 1937 Type Mapping, Hoffman 1866), infrastructure and development continue to influence the

hydrologic regime, reducing the distribution and extent of connected floodplain, level and extent of meadow inundation, and the meadow extent.

Recognizing this trend, the NPS has conducted a number of projects to enhance the condition of meadow and riparian areas in Yosemite Valley since the time of designation. These projects include:

- Extensive removal of high priority non-native species in meadows and riparian areas
- Boardwalks installed in Sentinel and Stoneman Meadows, substantially reducing the dense network of informal trails in these meadows
- Fill removed in Sentinel Meadow from the site of a former movie house and dance hall (Pavilion Square), and natural meadow topography restored at the site
- Ecological restoration in Cooks Meadow involving removal of a historic road (abandoned), filling in ditches, and restoration of natural meadow topography; and construction of a boardwalk across sensitive meadow habitat
- Riparian habitat restoration at Lower River Campground, Housekeeping Camp, El Capitan Picnic Area, Devil's Elbow, Sentinel Bridge, Swinging Bridge, Clark's Bridge, North Pines Campground, and the Cascades Dam site after dam removal
- Removal of infrastructure from meadows and riparian habitat, including actions to remove buried utility lines in meadows and replace them under existing roadways, removal of underground utility lines that cross the Merced River, and removal of utility lines and lift stations from riparian/riverbank areas

These projects mitigated many meadow- and riparian- related issues that were present at the time of designation, though many remain. The *Baseline Conditions Report* (NPS 2012) reached the following conclusions as regards the current conditions of Yosemite Valley meadows and riparian areas:

- **Informal trails:** Informal trails are common in Yosemite Valley meadows. Meadow research demonstrates that impacts associated with trails can extend beyond direct trail impacts, with impacts radiating from the trail's edge into the meadow (Holmquist 2004).
- **Conifer encroachment:** In five of six meadows surveyed, tree seedlings were present in more than 10% of the study plots, indicating that the tree encroachment documented since 1870 (Gibbens and Heady 1964) continues. The extent of tree seedlings was highest in El Capitan and Stoneman Meadows (32% of plots contained seedlings), indicating that nearly one-third of meadow area in El Capitan Meadow and Stoneman Meadow has some degree of tree encroachment (Ballenger et al. 2011).
- **Non-native species:** Non-native species are common across all Yosemite Valley meadows, with the highest extent of non-natives found in El Capitan Meadow and Stoneman Meadow (as inferred from percent of plots with non-native plants present—92% to 96% of plots contained non-native species) (Ballenger et al. 2011).
- **Meadow vegetation composition:** The mean cover of non-native plants was lower in saturated and inundated soils (by a factor of two to seven) compared with moist to dry soils (Ballenger et al. 2011). As found in other studies (Dwire et al. 2006), the distribution of non-native plants was strongly linked to water table depths in meadows, with a higher presence of non-native species in drier areas. Maintaining meadow water tables to promote areas of wet soil may be a means to sustaining native meadow vegetation composition (Kluse and Allen-Diaz 2005).
- **Meadow topography:** Ditches and other human alterations to meadow topography, remnants of the past agricultural era, remain within Yosemite Valley meadows. Ditches were also constructed during NPS administration beginning in 1929 (they were often referred to as "moral ditches" to keep people from driving into meadows) (Greene 1987). Ditches increase drainage and lower natural water-table levels, favoring non-native meadow vegetation.

- **Trails through meadows:** Formal trails in the Ahwahnee Meadow, Bridalveil Meadow, and Slaughterhouse Meadow pass through easily disturbed meadow habitat, some of which is inundated on a regular basis. Trails can alter hydrologic connectivity within the meadow by blocking natural flows.

Two recent studies, the *Merced River and Riparian Vegetation Assessment* (Cardno ENTRIX 2012) and the *Wildlife Condition Assessment for the Merced River Corridor in Yosemite Valley* (Espinoza et al. 2011) assessed the condition of eight different reaches of the Merced River in Yosemite Valley. They found:

- Reaches with high scores (>0.86 on a scale of 0.27 to 1.0; see below for a more detailed discussion of the derivation of such scores and their interpretation) had lower intensities of visitor use, and were generally characterized as areas with less bank erosion, high topographic complexity, and moderately developed vegetation with moderate structural complexity. These reaches included the Happy Isles, Inter-meadow, and above Pohono Bridge reaches of the river.
- Areas with poor scores (<0.71) had higher intensities of visitor use, more bank erosion, low topographic complexity, and a poorly developed riparian community. These reaches were above and below the confluence with Tenaya Creek and below Pohono Bridge.
- Recreational use (specifically, social trailing and riverbank trampling) have affected the condition of riparian wildlife habitat. Conditions varied by reach in response to the type of human impact. For example, the reach below Happy Isles was characterized as good wildlife habitat, with wide riparian buffers and a complex physical structure. Conversely, the reach below the confluence with Tenaya Creek was characterized as poor wildlife habitat, with narrow riparian buffers and low vegetation structural complexity.
- The majority of the riparian corridor had few non-native species, and moderate horizontal zonation and vertical overlap among plant layers, indicating a well-developed riparian community.
- The study observed bank erosion throughout the study area, particularly near bridges, recreation facilities, and some meander bends. Areas with moderate to high human use generally had fewer co-dominant species and lower riparian community structure complexity.
- There is greater availability of riparian habitat in the Upper Meadow, Inter-meadow, and Lower Meadow reaches, and that that the structural integrity of the riparian habitat in these reaches may be higher than in other areas of the Sierra Nevada.

Finally, a third recent study (Newcomb and Fogg 2011) examined the impacts of well pumping in Yosemite Valley on the surrounding ground water availability. Water for domestic consumption is pumped from three different wells in Yosemite Valley. Even though extraction rates approach 700,000 gallons daily in the summer (the period of greatest use), groundwater levels in Yosemite Valley show very little effect. This is most likely due to both to the aquifer's great depth (there is as much as 2,000 feet of sediment overlying bedrock in Yosemite Valley, so there is substantial water-holding capacity) and to recharge from surrounding areas. Consequently, such water extraction has no impact on groundwater recharge in nearby meadow/riparian areas or on downstream ecosystems (Newcomb and Fogg 2011).

Management Indicator and Monitoring Program for ORV 2

This section discusses the proposed management program for this ORV, including the indicators to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. The NPS selected three indicators to monitor the condition of this ORV through time: 1) fragmentation of meadow habitats resulting from proliferation of informal trails, 2) status of riparian habitat, and 3) riparian bird abundance. Because the condition of Valley meadows has improved since the time of designation, the

baseline that will be used to compare meadow conditions to the management standard for each indicator will be established using recent monitoring efforts, as discussed below.

Indicator 1 – Meadow Fragmentation Due to Proliferation of Informal Trails for ORV 2

The NPS would employ the same fragmentation indicator used for ORV 1—the Largest Patches Index – Five (LPI_5)—in high elevation habitats to monitor meadows in Yosemite Valley. The NPS would utilize the same protocols and definitions of adverse impact and degradation as described under ORV 1—high-elevation meadows and riparian habitat—Indicator 1, described earlier in this chapter. Data have been collected on this indicator in Yosemite Valley since 2008. The management responses for this ORV will vary slightly due to the relative lack of restrictions on access and limitations on structures (such as boardwalks and fences) in the non-Wilderness meadows of Yosemite Valley. The trigger points and management responses for this indicator in Segments 2A and 2B are found in Table 5-12.

TABLE 5-12: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR MID-ELEVATION MEADOWS (MEADOW FRAGMENTATION)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Decrease in LPI_5 threshold below 93% at the level of an individual meadow for one summer.	• Increase meadow monitoring assessments to one-year interval at each individual meadow that surpasses this value. Target the largest patches in meadow, and analyze trail condition and emergence of new trails. • Increase enforcement and education of Best Management Practices in meadows. • Implement restoration practices, including visitor messaging, restoration signs, delineation of trails determined to be less disturbing to meadow ecology, and closure of selected informal trails.	This action allows increased sensitivity to changes in trails, and would allow managers better opportunities to identify meadows of consideration, and take actions well before adverse impacts are incurred. With more frequent assessment, emerging trails and particularly problematic trails would be identified and restoration actions taken.
Trigger Point 2: Data analyses from annual fragmentation monitoring yield an LPI_5 value of less than 93% for three consecutive years in an individual meadow OR a decrease below 90% at the level of an individual meadow for one summer.	Further restoration of disturbed areas and informal trails in specific meadows that exceed trigger. Depending on the degree and extent of impacts, the NPS would enact some or all of the following actions: • Use boardwalks or hardened surfaces to allow access to sensitive areas. • Delineate trails through upland areas and along meadow perimeters to allow access while reducing fragmentation and meadow impacts. • Place restoration closure signs, and/or • Fencing along meadow perimeters. • De-compact trampled soils. • Salvage plants growing in trail ruts and use as part of revegetation to consolidate multiple parallel trails. • Re-contour topography. • Scatter locally gathered seed and organic materials to facilitate new plant growth. • Fill deep headcuts caused by informal trails with native soil and re-contour to natural meadow topography. • Institute closures in individual impacted meadows and increase visitor education associated with the closures.	This value represents the level at which a group of subject matter experts determined meadow resource protection was threatened, along with quality of visitor experience.

Management to Protect and Enhance Mid-Elevation Meadows and Riparian Habitat (Indicator 1, ORV 2)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 1, ORV 2)

Table 5-13 compares the current condition of meadow fragmentation for ORV 2 to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-13: CURRENT CONDITION OF MID-ELEVATION MEADOW AND RIPARIAN COMPLEX BASED ON MONITORING OF LARGEST PATCH INDEX-5 (LPI_5)

Metric	Meadow	LPI_5 by Year							
		Weighting Value*	2006	2007	2008	2009	2010	2011	2012
Meets management standard: LPI_5 is greater than 93% of weighted mean value of the meadows in a river segment, with no individual meadow less than 90%.	The high level of fragmentation in Cook's A, El Capitan, Sentinel A, and Leidig meadows, along with the high weighting values of the last three of these, mean that the management standard was not met in 2012.								
Management concern present: LPI5 is below 93% for any individual meadow (trigger 1) or below 90% for any individual meadow (trigger 2).	Ahwahnee	13%		96.97			98.37		
	Bridalveil	5%		96.59			99.25		
	Cook's A	2%	93.84		75.53	80.05	78.63	86.19	**66.83**
	Cook's B	8%	99.10		98.20			99.34	
	Cook's C	4%			99.09			95.04	
	El Capitan	20%	87.24		83.47	78.18	78.01	79.23	**74.02**
	Leidig	18%		63.06		95.89	82.37	86.95	**92.36**
	Sentinel A	14%		92.58			93.55		**82.85**
	Sentinel B	4%		98.37				99.90	99.84
	Slaughterhouse A	2%	98.60		98.27			86.86	93.24
	Slaughterhouse B	4%	99.02		99.31			99.74	99.29
	Stoneman A	4%	99.62	99.30	99.37	99.29	998.99	98.82	
	Stoneman B	1%	99.71	99.90	99.81	99.91	99.94	99.84	
	WEIGHTED AVERAGE for 2012 = 88.645								
Adverse impact: LPI5 is below 81% of weighted mean value of the meadows in a river segment for three consecutive years.	None present.								
Degradation: LPI5 is below 40% of weighted mean value of the meadows in a river segment.	None present.								

NOTE:

* Weighting value is determined by calculating the percentage of an individual meadow to the area of all measured meadows in the segment.

Results (Table 5-13) show that several Yosemite Valley meadows (Cook's A, El Capitan, Leidig, and Sentinel A) had a fragmentation index score of less than 93% for one summer, tripping the first trigger,

and/or below 93% for three consecutive years or below 90% for one summer, tripping the second trigger as well. Due to these low fragmentation scores, the management standard was not met in 2012.

Management Concerns and Protective Actions (Indicator 1, ORV 2)

Management concerns have occurred because several meadows have a fragmentation index that is less than either or both of the trigger points identified in Table 5-12 above.

To address the management concerns related to meadow fragmentation triggers for Cook's A, El Capitan, Leidig, and Sentinel A meadows, NPS will:

- Remove informal trails in meadows where they fragment meadow habitat or cross through sensitive, wet vegetation communities. Overall, NPS will restore six miles of informal trails throughout Yosemite Valley.
- Use boardwalks or hardened surfaces (amounts varying by alternative) to allow access to sensitive areas
- Delineate trails through upland areas and along meadow perimeters
- Place restoration closure signs, and/or fencing along meadow perimeters
- Fill deep headcuts caused by informal trails with native soil and re-contour to natural meadow topography
- De-compact trampled soils, and use salvaged plants growing in trail ruts and local seed to revegetate area and consolidate multiple parallel trails
- Institute closures in individual impacted meadows, and increase visitor education associated with the closures

The first priority for restoration will be El Capitan Meadow, with Cook's A, Leidig, and Sentinel A the next priorities.

Indicator 2 – Status of Riparian Habitat for ORV 2

Indicator Description

The objective of this indicator is to provide a comprehensive rapid assessment of riverbank (river riparian habitat) status every two to three years. The intent is to detect potential impacts from visitor use at the incipient stage and correct them in a timely manner so as to protect and enhance biological and Geological/Hydrological ORVs. Given the spatial and temporal complexity of riparian systems, this general indicator would be part of a comprehensive river protection implementation program that includes permanent riverbank vegetation monitoring plots and river cross-section analysis in addition to periodic surveys for total accumulated large wood in the channel. The NPS will also use this indicator to monitor a component of ORV 10, ethnographic resources in Yosemite Valley.

This indicator consists of scores derived from the California Rapid Assessment Method for riverine environments (CRAM, one of the same methods utilized in Cardno ENTRIX 2012) (Collins et al. 2008; CWMW 2013). This is an extensively peer-reviewed and validated protocol (e.g., Stein et al. 2009) intended to provide a general condition score of riverine wetlands sites using a combination of landscape, hydrology, physical, and biotic structure scores. Potential scores range from 0.27 for the poorest condition up to 1.00 for

the best. In Yosemite Valley, 20% of sites as evaluated in 2010 were classified in the low-condition class (scores below 0.71) and 20% were classified in the high-condition class (above 0.86) (Cardno ENTRIX 2012).[27]

Necessarily broad in nature, the CRAM score integrates substantial information and has been shown to adequately distinguish poor and good site conditions (Stein et al. 2009), while allowing for documentation of stressors that may be affecting ecosystem processes. Documenting stressors is particularly important for a rapid survey in this setting as it permits a fairly direct connection to possible management actions necessary to protect and enhance the ORV. Primary stressors on the riparian environment documented in Yosemite Valley include riverbank trampling and subsequent rapid erosion in heavy visitor use areas, and erosion around riprap and bridge abutments (Madej et al. 1991, 1994). This indicator would be supported by more rigorous monitoring of riparian vegetation and riverbank condition at permanently established plots in this segment (Yosemite National Park 2010). To refine this indicator, the park may adopt other protocols that provide more specific metrics of riparian condition as they become available.[28]

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The management standard for the status of riparian habitat varies across the alternatives, as shown below in Table 5-14. The standard is derived from an assessment of the number of sites currently in a low condition class (Cardno ENTRIX 2012) that will be affected by restoration actions in each alternative and is therefore based on the following:

- Of the 20% of sites currently in the low condition rating, approximately half have the potential of being restored to a moderate or high condition class in Alternatives 2 and 3. The remaining 50% of these sites could remain in a low condition class due to their proximity to critical roads and bridges. Therefore, a maximum of approximately 90% of all sites could achieve a moderate- or high-condition rating once restoration actions are taken in Alternatives 2 and 3.
- Alternatives 4, 5, and 6 envision higher use numbers, though with more controls on visitation. The net effect of higher visitor numbers is that fewer monitored sites are likely to be in moderate or high condition. Therefore, the management standard for these alternatives is that at least 80% of sites should be in moderate- or high-condition.
- No matter the level of use, however, a minimum of 20% of sites must be in high-condition to ensure enhancement of conditions would take place. For that reason, and because the majority of all sites must be in moderate- to high-condition under any alternative, all alternatives provide for the protection and enhancement of the Biological ORV.

[27] Examples of specific measurements incorporated into CRAM scores are buffer width and condition, channel stability, hydrologic connectivity to the adjacent floodplain, structure patch richness, number of plant layers, and eight other metrics. Metrics are combined in a way specified in the CRAM protocol to produce a final score. Both banks of the river would be evaluated in 200-meter reaches (approximately 160 individual sites) every two to three years. The CRAM riverine module defines riverine wetlands as "the riverine channel and its active floodplain, plus any portions of the adjacent riparian areas that are likely to be strongly linked to the channel and immediate floodplain through bank stabilization and allochthonous organic material (productivity) inputs."

[28] Note that the streambank stability indicator used to monitor higher elevation meadows (both in this plan and in the Final Tuolumne River Plan/EIS) is not suitable for the higher order stream found in Yosemite Valley; CRAM is.

TABLE 5-14: MANAGEMENT STANDARDS FOR THE STATUS OF RIPARIAN HABITAT INDICATOR

Alternatives	Associated Management Standard
Alternative 1	No action
Alternatives 2 and 3	At least 90% of sites would attain CRAM scores of 0.71 or higher (moderate or high rating) and at least 20% of sites would rate as high condition (greater than 0.86) during any single monitoring period.[a]
Alternatives 4, 5, and 6	At least 80% of sites would attain CRAM scores of 0.71 or higher (moderate or high rating) and at least 20% of sites would rate as high condition (greater than 0.86) during any single monitoring period.

NOTE:
[a] The 0.71 and 0.87 values are based on the grouping of such scores in Cardno ENTRIX 2012.

Adverse Impact

An adverse impact is indicated when 30% or more of monitored sites in Segments 2A and 2B are rated in a low condition class, as measured by the CRAM rating system. This is the minimum change below current condition that could be detected given physical metrics and observer variability.

Surveys in 2010 (Cardno ENTRIX 2012) indicated that about 20% of the riparian area along the Merced River in Yosemite Valley was in low condition. Consensus among NPS staff and outside specialists is that this is an unacceptable impact on riparian habitat in this segment. However, these impacts are highly localized (almost all of them are between Clark's and Sentinel Bridge), with the remaining 80% of the segment in higher condition (moderate or high). Most riparian habitat in the valley, in other words, is functioning at an acceptable level. Consequently, the segment as a whole is functioning at a level higher than what most ecologists would consider adverse impact (e.g., Poole 2002). Management concerns are clearly present (see below), with the overall condition for this ORV within Segments 2A and 2B approaching adverse impact. This definition of adverse impact, then, defines a point that is the minimum detectable decline in proportion to monitoring sites in the moderate and high condition classes from the 2010 survey.

Currently, 16 of 81 sites (20%) rate in low condition. In order to detect a significant increase (at the 95% confidence level) in the number of sites in low condition, at least 22 sites (27%) would have to fall into the low category. Given the dynamic nature of river systems and the estimated uncertainty in CRAM scores of +/- 6% (Stein et al. 2009), the percentage of sites in the low condition class that constitutes adverse impact is rounded to 30%.

Degradation

Degradation is indicated when 40% or more of monitored sites in Segments 2A and 2bBhave CRAM condition ratings of low (less than 0.71). Using the current distribution of CRAM scores, 32 out of 81 sites (39.5%) would need to fall into this condition.

Degradation indicates the need for substantial restoration efforts. Extensive or severely degraded streambank stability conditions, manifested from either anthropogenic or natural sources, would likely propagate the loss of functional integrity of the stream channel on site and downstream. Degradation of riparian zones and stream channels diminishes their capacity to provide critical functions, including chemical and nutrient cycling, water purification, flood attenuation, maintenance of stream flows and temperatures, groundwater recharge, and habitats for fish and wildlife (Kauffman et al. 1997). Ultimately, adverse consequences of channel instability (or disequilibrium) would be associated with land productivity

change, land loss, aquatic habitat deterioration, changes in both short- and long-term channel evolution, and loss of physical and biological function (e.g., Rosgen 2001).

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Status of Riparian Habitat

Monitoring would take place along the entire portion of this segment that is alluvial in nature, from Happy Isles Bridge to 0.6 mile downstream of Pohono Bridge. Both left and right banks of the river over this entire length would be divided into 200-meter sites (reaches) and each would be assigned a CRAM score. Monitoring would be conducted every two to three years and after major (greater than 10-year return interval) flood events. Table 5-15 depicts the trigger points and management response to riparian habitat ratings.

TABLE 5-15: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR MID-ELEVATION RIPARIAN HABITAT (STATUS OF RIPARIAN HABITAT)

Trigger Point(s) at Which Action Management Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Routine survey finds the decline of condition class of any reach from high to moderate, high to low, or moderate to low OR surveyors note any localized impact due to visitor use such as an incipient headcut or loss of riverbank vegetation. The scale of impacts and potential restoration is up to 200 meters of riverbank, the maximum single reach length in the CRAM protocol.	Investigation of site conditions and potential factors leading to the decline in condition class or localized impact. Specific mitigating actions could range from continued regular monitoring to restoration and exclusion of the reach from visitor use. Actions would consist of at least one of the following: • Restore affected area and address causes of impacts • Fencing around campgrounds and designated river access points • Increased monitoring frequency to assure recovery of site	The purpose of this trigger is to allow for immediate site-specific action regarding a potential impact to riparian condition. In addition, this action will refine our understanding of baseline conditions and causal mechanisms (streambank alteration, natural processes, or cumulative effects) affecting streambank condition, on-site and within the greater contributing source area for that site.
Trigger Point 2: Presence of a negative trend indicating that the breach of the management standard is likely without intervening management actions. The scale of impacts is greater than 200 meters of riverbank. *(Note that this is considered the current state of the riparian area in the Yosemite Valley segment.)*	Action at this level requires a more comprehensive visitor management and restoration response than under Trigger Point 1. Actions at this point must be sufficient to restore river condition at greater than the single reach scale and prevent (or mitigate) displacement of impacts upstream or downstream of the affected area. Actions would include one or more of the following: • Fencing around campgrounds and designated river access points • Active patrols of river area to protect riparian vegetation from trampling • Manage access by limiting use adjacent to the river • Close or re-design campgrounds to lessen human impacts to the riparian area	This trigger point indicates that impacts have grown beyond site-specific impacts and now affect multiple reaches of the river. While unforeseen circumstances could manifest this condition, visitor impacts are likely to be the most important factor. The purpose of taking action at this point would be to prevent impacts from coalescing and propagating downstream leading to adverse impact.
Trigger Point 3: Riparian conditions have not improved 10 years after reaching Trigger Point 2 and implementing restoration and visitor use management actions.	Further reduce/restrict use along riverbanks and in impacted riparian areas.	Riparian condition may take several years to recover following restoration or visitor use management actions. No measureable improvement 10 years after implementing actions, however, suggests that human use is preventing recovery.

Management to Protect and Enhance Mid-Elevation Meadows and Riparian Habitat (Indicator 2, ORV 2)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 2, ORV 2)

Table 5-16 compares the current condition of riparian condition for ORV 2 to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-16: CURRENT CONDITION OF MID-ELEVATION STATUS OF RIPARIAN HABITAT

Metric	Current Conditions
Meets management standard: *Alternative 1*: No action. *Alternatives 2 and 3*: At least 90% of sites would attain CRAM scores of 0.71 or higher (moderate or high rating) and at least 20% of sites would rate as high condition (greater than 0.86) during any single monitoring period. *Alternatives 4, 5 and 6*: At least 80% of sites would attain CRAM scores of 0.71 or higher (moderate or high rating) and at least 20% of sites would rate as high condition (greater than 0.86) during any single monitoring period.	
Management concern present: A decline of condition class of any reach from high to moderate, high to low, or moderate to low, or any localized impact due to visitor use (trigger 1) (triggers 2 and 3 are shown in Table 5-15 above).	Surveys in 2010 indicate that about 80% of sites were in moderate or high condition, and 20% were in low condition, due at least in part to visitor use.
Adverse impact: When 30% or more of monitored sites are rated in a low condition class.	None present.
Degradation: When 40% or more of monitored sites are rated in a low condition class.	

Surveys in 2010 indicate that management concerns were present in terms of the riparian status indicator. These surveys indicated that about 80% of sites attained a minimum CRAM score of 0.71. The remaining 20% of the riparian area along the Merced River in Yosemite Valley was in low condition, with the scale of impacts being greater than 200 meters of riverbank, thereby tripping the first and second triggers for this indicator. These impacts are highly localized and would be mitigated once ecological restoration is implemented.

Management Concerns and Protective Actions (Indicator 2, ORV 2)

Table 5-15 above presents the trigger point values for the status of riparian habitat indicator used to monitor meadow and riparian conditions for ORV 2. Management concerns have occurred because monitoring results indicate Trigger Points 1 and 2 have both been exceeded (a trigger has also been tripped under the meadow fragmentation indicator for this ORV, as discussed above).

To address this management concern, the NPS will:

- Re-vegetate riverbanks between Clark's Bridge and Sentinel Bridge with native riparian shrubs and trees. Utilize temporary closures to sensitive resource areas to allow natural recovery along riverbanks.
- Strategically place wood according to Yosemite Directive #31, promoting bar formation and natural channel narrowing.

- Re-direct visitor use to more stable and resilient river access points such as sandbars, and designate formal river access sites. Establish fencing and signage to protect sensitive areas; install boardwalks where appropriate, and actively re-vegetate where needed.
- Remove all campsites within 100 feet of the ordinary high water mark. Restore riverside areas of Backpackers, North Pines, and Lower Pines campgrounds to natural riparian conditions.
- Construct hardened structures at designated river access points where needed to facilitate and concentrate safe visitor access. Fence and sign sensitive areas and reestablish riparian vegetation.

The NPS will also establish a riparian buffer and prohibit new development along both sides of the Merced River within 150 feet of the ordinary high water mark, and move the Yosemite Village Day-use Parking Area 150 feet north of the ordinary high water mark. A riparian buffer is a strip of riparian vegetation along the banks of a river that filters runoff and provides a transition zone between the river and human land use (e.g., Osbourne and Kovacic 1993). The concept of a riparian buffer to protect river resources is well established in the scientific literature and has been applied by numerous federal, state, and local land management agencies (e.g., Welch 1991; Wenger 1999; Lee et al. 2004; Mayer et al. 2006). The primary justifications for employing a riparian buffer along the Merced River are to protect water quality and riparian habitat. In terms of water quality, riparian buffers help trap pollutants that could otherwise directly enter the river. Buffers reduce the magnitude and velocity of overland flow, trap sediment, and attenuate compounds such as nitrogen and phosphorous and pathogens such as E. coli (e.g., Osbourne and Kovacic 1993; Mayer et al. 2005; Tate et al. 2006; Hoffmann et al. 2009). Riparian buffer vegetation helps to stabilize riverbanks through provision of root cohesion on banks and floodplains, reduce erosion, and allow surface water to infiltrate the soil. Riparian buffer vegetation also provides a source of large wood to the river and adjacent floodplain, which dissipates river flow energy and regulates channel form (Montgomery et al. 2003). In terms of habitat, riparian buffers enhance important habitat for birds and other wildlife by allowing establishment of new vegetation and persistence of a complex habitat structure (e.g., Darveau et al. 1995, 2001; Whitaker and Montevecchi 1999). Buffers also protect aquatic ecosystems by providing organic nutrients, by supplying woody debris that improves habitat complexity, and by moderating water temperatures by vegetative shading of the river (e.g., France et al. 1996; Karr and Schlosser 1977). The effective width of a riparian buffer depends on the steepness of the local topography, the floodplain extent, soil type(s), vegetation type(s), local wildlife species, and the nature and extent of human land use (e.g., Lee et al. 2004; Hawes and Smith 2005; Mayer et al. 2006). As a result of these numerous factors, as well as the inherent variability and complexity of river system processes, there are no singular, generic standards for riparian buffer widths. Review of scientific literature indicates a range of recommended buffer widths, with values generally ranging between a minimum of 30 feet and a maximum of 300 feet (Castelle et al. 1994; Wenger 1999; Lee et al. 2004; Mayer et al. 2006); typical values fall between 50 and 150 feet. In general, larger buffers afford greater levels of river protection. Because the riparian buffers proposed herein are designed to protect a Wild and Scenic River within a National Park and World Heritage site, a strong level of river protection is desired; a 150-foot buffer is therefore proposed for all alternatives.

Indicator 3 – Riparian Bird Abundance for ORV 2

Indicator Description

The riparian bird indicator is based on the relative abundance of five riparian bird species that breed throughout the meadow and riparian habitats in the Yosemite Valley segment each summer. Birds are an effective indicator of overall habitat quality and have been used as indicators of ecological integrity in a variety

of habitats (Bradford et al. 1998; Canterbury et al. 2000; O'Connell et al. 2000; Venier and Pearce 2007). Bird monitoring is cost-effective, efficient, and effective because birds advertise their presence through vocalizations, making them relatively easy to detect and identify. They can also be censused efficiently over various spatial scales. An assemblage of birds with strong ecological ties to riparian habitat, as opposed to a single species, incorporates a wider range of sensitivities to habitat disturbances and modifications (Koskimies 1989). Hence, relative abundance of such an assemblage is more likely to reflect changes in the ecosystem without population dynamics of one of the species drastically skewing the overall trend (Zonneveld 1983).

The riparian bird indicator comprises five focal species identified by the Riparian Habitat Joint Venture as being biologically relevant indicator species (RHJV 2004) and that occur in Yosemite Valley in abundances that allow collection of an adequate sample size. These five species are Spotted Sandpiper, Warbling Vireo, Yellow Warbler, Song Sparrow, and Black-headed Grosbeak (see Table 5-17 for scientific names and ecological characteristics). This suite of focal species follows suggestions by Chase and Geupel (2005) to select species that are easy and efficient to monitor and that represent various habitat elements and processes in the riparian ecosystem. All of the selected focal species except for Song Sparrow are neotropical migrants, which are considered sensitive (declines in neotropical species owing to human disturbance and habitat fragmentation have been well documented; see Wilcove and Terborgh 1984; Temple 1986; Terborgh 1989).

TABLE 5-17: RIPARIAN BIRD ASSEMBLAGE IN YOSEMITE VALLEY SEGMENT AND GUILD ASSIGNMENTS

Species	Scientific name	Neotropical migrant	Nest type	Diet	Foraging type
Spotted Sandpiper	*Actitis macularius*	Yes	ground nester	Insectivore	ground gleaner
Warbling Vireo	*Vireo gilvus*	Yes	cup nest >10 feet off the ground	Insectivore	foliage gleaner
Yellow Warbler	*Setophaga petechia*	Yes	cup nest < 10 feet off the ground	Insectivore	foliage gleaner
Song Sparrow	*Melospiza melodia*	No	ground nester	Omnivore	ground gleaner
Black-headed Grosbeak	*Pheucticus melanocephalus*	Yes	cup nest < 10 feet off the ground	Omnivore	foliage gleaner

NOTE: Data compiled by Bryce (2006) and collected from Terres (1980), Ehrlich et al. (1988), and DeGraaf et al. (1991).

These riparian focal species make up a diverse group of birds representing a variety of breeding niches and foraging strategies. Collectively, their habitat requirements are indicative of a structurally diverse riparian system. These riparian habitat specialists represent better indicators than habitat generalists, in part because habitat specialists are more susceptible to local extinction following environmental change (Hutto 1998). Also, their habitat requirements during the breeding season represent a range of structural components; thus their population trends could indicate whether the integrity of the habitat is improving or deteriorating under a range of possible habitat management actions (Carignan and Villard 2002).

Although birds have been widely used as indicators (Beintema 1983; Powell and Powell 1986; Bost and Mayo 1993; Daily et al. 1993; Bradford et al., 1998; Hutto 1998), it is still challenging to develop an indicator that discriminates between population declines caused by changes within the local habitat (i.e., the Yosemite Valley meadows and riparian habitat—ORV 2) and declines caused by factors occurring outside of that habitat (e.g., changes in the wintering habitat, diseases, parasites, competition, predation, conditions in

other areas used by migratory species, and/or climate change) (Steele et al. 1984; Bryce 2006). This monitoring program would address this need in two complementary ways.

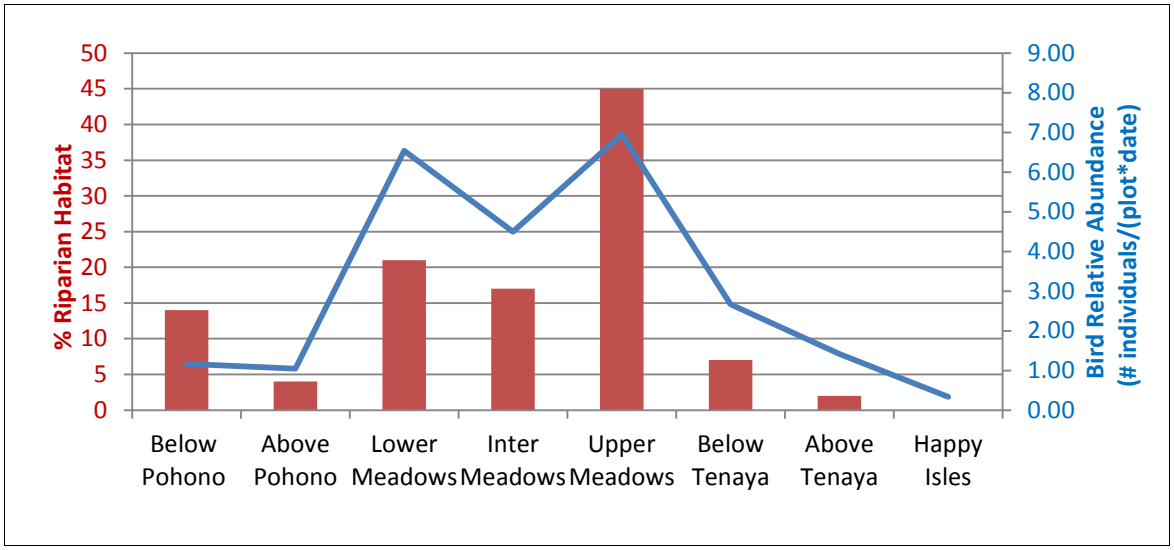
First, the NPS would continue conducting park-wide surveys for these birds as part of the Sierra Nevada Network bird-monitoring program (and using the peer-reviewed survey protocol developed by Siegel et al. 2010). Annual data collected park-wide would provide a valuable comparison with population trends detected in Yosemite Valley. For example, if Yellow Warblers disappeared from Yosemite Valley, park ornithologists could turn to the park-wide dataset (collected using exactly the same protocol) to determine if the trend is specific to Yosemite Valley, or if instead the decline reflects a park-wide threat.

Second, the NPS would conduct these bird surveys at the same sites (randomly selected) where the Yosemite Visitor Use and Impact Monitoring Program also collects vegetation, riverbank, and human use data (Newburger et al. 2009; Starcevich 2011).[29] If a decline in riparian bird abundance is detected, then the vegetation data could be used to determine possible correlations associated with changes in vegetation attributes. Several studies have found local vegetation and habitat characteristics to be important in explaining variation in local bird abundance (e.g., Wiens and Rotenberry 1981; Cody 1985; Strong and Bock 1990; Saab 1999; Nur et al. 2008). Knowledge of a species' life history and habitat requirements enables researchers to relate an observed decline to possible human impacts on specific habitat components or to a flood or other natural event. For example, preliminary data suggest a relationship between the relative abundance of riparian birds and the amount of riparian habitat within specific reaches of the Merced River in Yosemite Valley (Cardno-ENTRIX 2012) (Figure 5-2). If a decline in one of the species using these riparian habitat types were detected, park managers would examine those habitats to see if changes were occurring that could account for the decline. They would also examine the area's recent history to see if a natural event could have caused the decline.

In summary, the riparian bird indicator is based on five riparian specialist bird species that commonly breed in Yosemite Valley's riparian habitat and that represent various life histories and riparian habitat requirements. The indicator accounts for population changes that could be caused by sources external to the habitat condition of this ORV by including two additional components: (1) comparison with similar data being collected on a wider spatial scale, and (2) matching the sampling plots with concurrent data collection on vegetation attributes and extent of human use. Over the long term, such relative abundance data on riparian-obligate species will be used to assess whether meadow and riparian communities in Yosemite Valley are achieving the management standard.

[29] Vegetation data collected include functional groups related to understory community composition (nonvascular plants, annual biennials, tap-rooted perennials, fibrous-rooted perennials, woody seedlings, and shrubs), physical riverbank characteristics (litter cover, bare ground, large woody debris, substrate size classes, and exposed roots), and canopy characteristics (deciduous trees, evergreen trees, and snags).

Figure 5-2: Mean Relative Abundance of Five Riparian Focal Species in 2010-2011 in Relation to Percentage of Riparian Habitat (Black Cottonwood Temporarily Flooded Forest Alliance and Shining Willow Riparian Scrub) in eight Geomorphic Reaches in Yosemite Valley



NOTE: Habitat alliances and geomorphic reaches described in Cardno-Entrix (2012).

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The management standard is that the abundance of any one of the five species, averaged across the three annual observation periods, exceeds the 25th percentile of its distribution, as provided in Table 5-18 below, in at least three out of every ten years, or that the average abundance of all five species, averaged again across the three annual observation periods, exceeds their summed 25th percentile, unless a species shows similar declines in other nearby riparian habitat not in Yosemite Valley. Additionally, neither the abundance of any one of the five species or the average abundance of all five species can fall below the 20th percentile for more than three of any 10 years. For example, for Song Sparrow populations to meet the management standard, observers would need to see or hear at least four individuals in their three visits to exceed the 25th percentile (4 sightings/3 visits=1.33 birds per visit, which exceeds the 25th percentile value of 1.22), at least three times in a decade. Or, for the sum of all five species, observers would need to see or hear an average of ten or more individuals of any of the five species (any combination that adds to ten) during the three annual visits, to exceed the 25th percentile (10 sightings/3 visits=3.33, which exceeds the 25th percentile value of 3.21), again at least three times in a decade.

The riparian bird management standard adopted for the *Final Merced River Plan/EIS* was developed from a four-year pilot dataset: a two-year dataset collected by NPS biologists in 2010-2011 (NPS unpublished data) at 24 randomly selected monitoring plots and a two-year dataset collected by other skilled bird observers (Point Reyes Bird Observatory scientists) in 2006-2007 at 20 systematically placed plots in Yosemite Valley (Stillwater Sciences 2008). In the absence of long-running historical data in Yosemite Valley, this standard uses the 4-year pilot dataset to determine expected interannual variation. Percentiles were calculated based on the interannual mean and standard deviation (Table 5-18).

TABLE 5-18: SPECIES-SPECIFIC ANNUAL ABUNDANCES[a]

Species	Average	Variance	Max	Inter-annual Average[b]	Inter-annual Variance[b]	Inter-annual Standard Deviation[a]	Percentiles[c]		
							10%	20%	25%
Spotted Sandpiper	0.42	0.62	5	0.38	0.07	0.26	0.05	0.16	0.21
Warbling Vireo	0.78	0.85	4	0.78	0.08	0.28	0.41	0.54	0.59
Yellow Warbler	0.54	0.83	5	0.50	0.09	0.31	0.11	0.24	0.29
Song Sparrow	1.55	1.65	6	1.50	0.17	0.41	0.97	1.15	1.22
Black-headed Grosbeak	0.84	1.10	5	0.81	0.10	0.32	0.41	0.55	0.60
Sum	**4.13**	**8.37**	**18**	**3.97**	**1.28**	**1.13**	**2.52**	**3.02**	**3.21**

NOTE: Yosemite Valley point count data were collected by PRBO Conservation Science biologists in 2006-2007 (Stillwater Sciences 2008) and NPS biologists in 2010-2011 (NPS unpublished data).

[a] Units are the number of detections per plot—the number of birds seen or heard at a plot, averaged across the three annual visits per plot. Species specific annual abundances (average, variance, and maximum abundance); interannual (year to year) average, variance, and standard deviation; and percentiles are based on the interannual average and standard deviation. Values are calculated from four years of point count data (2006, 2007, 2010, and 2011) collected in Yosemite Valley.

[b] Computed by first calculating the within-year average across sites and dates for each year, then taking the average, variation, and standard deviation of those annual averages. (The Interannual average differs from the individual average because it weights years equally while the individual average effectively weights years by the "Plot by Date" effort.)

[c] Percentiles are based on the interannual average and standard deviation, and are the values that abundances are expected to be below N% of the time due to random fluctuations as observed in the four years of pilot data.

In any given year, random population fluctuations may yield results less than the values for the 25th percentiles. To fall below the management standard, such poor years would have to occur 7 or more times per decade. To fail to meet the management standard for any individual species, the decline would have to be directly associated with ORV 2 in Yosemite Valley. If similar declines were observed in other nearby riparian habitats (e.g., Wawona Meadow, Tuolumne River riparian corridor), the management standard would still be met, though the reasons for the decline would still need to be determined. The management standard is set to safeguard against the chance of falling below the standard due to chance fluctuations while being sensitive enough to be triggered if the riparian ORV in Yosemite Valley becomes ecologically dysfunctional.

There may be certain instances when the management standard needs to be reevaluated and potentially readjusted: (1) a natural event (e.g., flood, fire, drought) that does not pertain to human use causes the target threshold to be exceeded; (2) another dataset from Yosemite shows more variation than expected annual variation; (3) any individual species disappears across all sites; or (4) new available data, science, or technology.

Adverse Impact

An adverse impact would occur when the average abundance of any individual species or the average abundance summed across all species falls below the 20th percentile of the respective distributions in at least four out of 10 years, unless a species shows similar declines in other nearby riparian habitat not in Yosemite Valley. As Table 5-18 indicates, falling below those percentiles would indicate that the bird species are becoming less common. For example, Warbling Vireo detections would decline from 0.59 averaged across all three observation periods in a year (the management standard), to less than 0.54 in a year (the adverse impact level). Or, the average number of sightings would fall from 3.21 in a year (the management standard), to less than 3.02 in a year (the adverse impact level).

Because of the fluctuations that are possible from year to year, the duration of four out of 10 years is used. This accounts for stochastic events, such as flooding or fire (both of which have occurred in Yosemite Valley in the last couple of decades) that could temporarily reduce populations. If such an event occurred, it is reasonable to assume that the habitat and bird community would change, but would remain below the 20th percentile threshold in fewer than four out of 10 years. If rebounding did not occur and human-use factors are identified as the cause of adverse impact, then mitigation to reverse impacts would be necessary to restore ecological function.

There may be certain instances when the point of adverse impact needs to be reevaluated and potentially readjusted: (1) a natural event (e.g., flood, fire, drought) that does not pertain to human use causes the adverse impact threshold to be exceeded; (2) another dataset from Yosemite shows more variation than expected annual variation; (3) any individual species disappears across all sites; or (4) new available data, science, or technology. As explained in the triggers discussion below, the NPS is committed to ensuring adverse impacts or degradation do not occur, through the multiple levels of management triggers.

Degradation

Degradation would be present when the average abundance of any individual species or average abundance summed across all species falls below the 10th percentile of the respective distributions in at least five out of 10 years, unless a species shows similar declines in other nearby riparian habitat not in Yosemite Valley. As Table 5-18 indicates, falling below those percentiles would indicate that the bird species are becoming considerably less common. For example, Spotted Sandpiper sightings would decline from 0.21 averaged across all three observation periods in a year (the management standard), to less than 0.05 in a year (the degradation level)—a decline of more than 75%. Or, the summed sightings would fall from 3.21 across all three observation periods in a year (the management standard), to less than 2.52 in a year (the tenth percentile, or degradation level).

Because of the fluctuations that are possible from year to year, degradation is reached only when riparian bird abundances drop below the 10th percentile threshold in at least five out of 10 years. The duration of five out of 10 years accounts for stochastic events. If such an event occurred, it is reasonable to assume that the habitat and bird community would rebound above the 10% threshold within five out of 10 years. If rebounding does not occur and human use factors are identified as the cause of degradation, then mitigation to reverse degradation would take multiple years and a tremendous amount of effort and resources, but would be necessary to restore ecological function.

There may be certain instances when the point of degradation needs to be reevaluated and potentially readjusted: (1) a natural event (e.g., flood, fire, drought) that does not pertain to human use causes the degradation threshold to be exceeded; (2) another dataset from Yosemite shows more variation than expected annual variation; (3) any individual species disappears across all sites; or (4) new available data, science, or technology. The NPS is committed to ensuring adverse impact or degradations levels are never met through the multiple levels of management triggers developed, as explained below.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Riparian Bird Abundance

Bird surveys will be conducted at the same 24 randomly selected sites (Figure 5-3) where vegetation and riverbank data are regularly collected through the Yosemite Visitor Use and Impact Monitoring Program

(Newburger et al. 2009; Starcevich 2011). Using the peer-reviewed survey protocol and standardized datasheets developed by Siegel et al. (2010), the NPS will conduct point count surveys each year during the breeding season (May 15-June 30). At each of the 24 point count locations, the NPS will conduct three sets of 7-minute surveys, spaced at least ten days apart. The observer will record observed species (detected by visual cues, song, or call), and indications of breeding status, such as copulation, courtship or territorial display, food carrying, and any observed fledglings. To reduce sample bias, observers will be highly trained and demonstrate competence at bird identification. Survey locations will not change during the season or between years. Because bird activity tends to decrease later in the morning, surveys will begin within 10 minutes of official local sunrise time and will be completed within 3.5 hours. Surveys will only take place under mild weather conditions. For a more detailed description of the survey protocol, see Siegel et al. (2010). Each year, data analysis for each focal species and all focal species combined will include within-year average detections per visit, variance among visits, and maximum number of individuals detected in a single visit. In addition, interannual (year to year) averages and standard deviations will be updated in order to calculate percentiles. These percentiles are the basis for assessing whether the management standard is being met. However, as new data, technology, or science becomes available, we may incorporate changes into the protocol for conducting field surveys or analyzing data, which may change the averages and standard deviations, and in turn, change the calculated percentiles.

Figure 5-3: Point Count Locations (n = 24) within the Merced River Corridor in Yosemite Valley

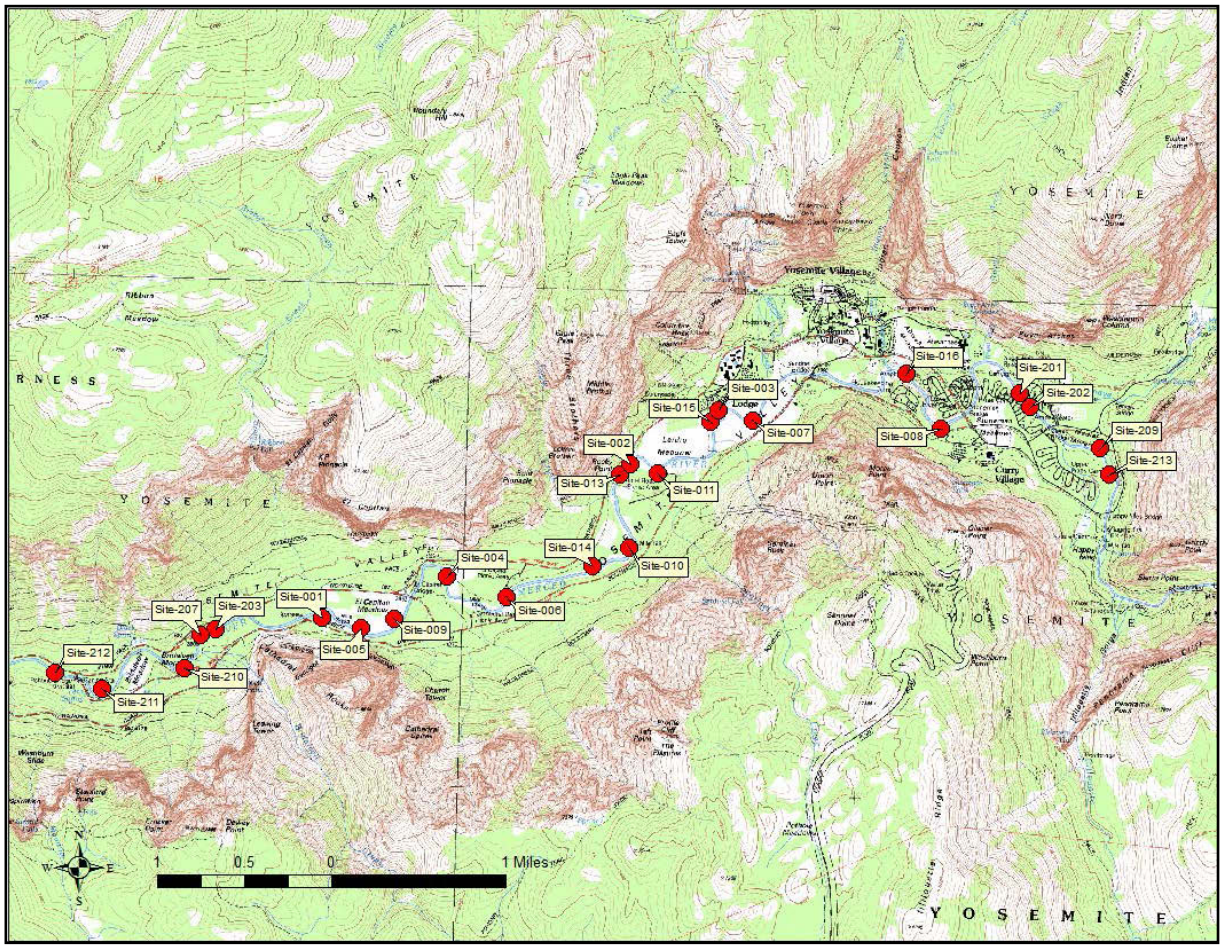


TABLE 5-19: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR RIPARIAN BIRD INDICATOR

Trigger Point(s) at Which Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Average abundance of two or more individual species drops below the 10th percentile threshold for one year or the average abundance summed across species drops below the 20th percentile threshold in two out of three years.	For each plot, assess riparian bird assemblage and extent of human impacts. If anthropogenic activities are correlated with declining riparian bird populations, then implement actions to limit the extent and magnitude of effects (i.e., human impacts or management practices). Actions would also include visitor messaging, restoration signs, and/or targeted vegetation restoration.	Management action to assess vegetation attributes and human use at potentially impacted sites would refine our understanding of baseline conditions and causal mechanisms (altered riparian habitat function, natural processes, external factors, or cumulative effects) affecting local populations of riparian birds.
Trigger Point 2: Average abundance of two or more individual species are below the 10th percentile threshold in three out of five years or the average abundance summed across species is below the 25th percentile threshold in five out of seven years.	For those potentially impacted plots that have lower bird abundance, assess any changes in vegetation attributes and human use that may be causing declines in riparian birds. If anthropogenic activities are identified as causal mechanisms of declining riparian bird populations, then implement actions to limit the extent and magnitude of effects (i.e., human impacts or management practices). Actions would include one or more of the following: 1) restoration practices at those impacted sites where riparian birds have declined. 2) hard closures of individual impacted areas, including law enforcement and increased visitor education surrounding closures and riparian vegetation impacts. Closure regulations would be represented within the superintendent's compendium to allow for law enforcement.	If this trigger point is exceeded, actions will be necessary to ensure the indicator does not fall below the management standard.

While actions under the trigger points should prohibit falling below the management standard, unforeseen circumstances could occur. Plots that exhibit declines that fall below the management standard would require a comprehensive analysis of causal relationships for informing effective restoration actions. Restoration actions would be guided by identifying specific elements or attributes of habitats used by affected bird focal species. Earlier studies on bird-habitat associations emphasized general structural characteristics of vegetation (Wiens 1969; Willson 1974; Cody 1985), while more recent studies have identified the importance of specific tree species for riparian-dependent birds (Strong and Bock 1990; Saab 1999). Nur et al. (2008) reported that local vegetation and habitat characteristics were important in explaining variation in local abundance. Concurrent with active habitat restoration, elimination of anthropogenic use of the impacted riparian habitats (e.g., willow and cottonwood stands) adjacent to the river may occur.

Management to Protect and Enhance Mid-Elevation Meadows and Riparian Habitat (Indicator 3, ORV 2)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (Indicator 3, ORV 2)

Table 5-20 compares the current condition of riparian bird abundance for ORV 2 to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-20: CURRENT CONDITION OF MID-ELEVATION ABUNDANCE OF RIPARIAN BIRDS

Metric	Current Conditions			
	Species	Percentiles		
		10%	20%	25%
	Spotted Sandpiper	0.05	0.16	0.21
	Warbling Vireo	0.41	0.54	0.59
	Yellow Warbler	0.11	0.24	0.29
	Song Sparrow	0.97	1.15	1.22
	Black-headed Grosbeak	0.41	0.55	0.60
	Sum	**2.52**	**3.02**	**3.21**
Meets management standard: The abundance of any one of the five species, averaged across three years, exceeds the 25th percentile of its distribution in at least three out of every ten years, or that the average abundance of all five species, averaged across three years, exceeds their summed 25th percentile, unless a species shows similar declines in other nearby riparian habitat.	The first status assessments will take place after one year of monitoring, in early 2014. The next assessment requires information from two out of three years, and then ten years.			
Management concerns present: Average abundance of two or more individual species drops below the 10th percentile for one year, or the average abundance summed across species drops below the 20th percentile in two out of three years.				
Adverse impact: When the average abundance of any individual species or the average abundance summed across all species falls below the 20th percentile in at least four out of ten years.				
Degradation: When the average abundance of any individual species or average abundance summed across all species falls below the 10th percentile in at least five out of ten years.				

The NPS is beginning to monitor riparian bird abundance. A baseline for this indicator is in place to monitor the status of the indicator through time. The first status assessments will take place in early 2014, after one year of monitoring. The next assessment requires information from two out of three years. Confirmation of the presence or absence of management concerns, adverse impacts, or degradation requires 10 years of monitoring data.

Management Concerns and Protective Actions (Indicator 3, ORV 2)

As noted above, data are still being collected, so a determination of whether a management concern, adverse impact, or degradation are present for this indicator for ORV 2 is not possible at this time. However, because triggers have been tripped under both the meadow fragmentation and the status of riparian habitat indicators for this ORV (as discussed above), ORV 2 has management concerns present (see the meadow fragmentation and status of riparian habitat discussions above for the actions NPS will take to address these concerns).

Localized Concerns and Enhancement Actions (ORV 2)

Actions proposed to enhance the Biological ORV in Segments 2A and 2B would improve meadow hydrology and topography, install or extend boardwalks to reduce meadow trampling, fill drainage ditches not serving current operational needs, remove abandoned infrastructure, and remove conifer seedlings and saplings from meadows. The following actions are common to Alternatives 2-6:

- **Meadow hydrology:** Construct wide box culverts to enhance natural water flows into meadows, and formalize or remove road shoulder parking. Restore hydrologic processes to increase sheet flow into meadows to sustain native meadow vegetation and limit conifer growth where possible. Target areas include Sentinel Meadow, Cook's Meadow, El Capitan Meadow, Stoneman Meadow, and other meadows as necessary.
- **Meadow habitat:** Restore denuded vegetation in Ahwahnee Meadow, Sentinel A Meadow, Stoneman Meadow, and other meadows as necessary. Protect re-vegetated areas with fencing or other natural barriers and install signs to prevent vegetation trampling. Develop or extend boardwalks to accommodate visitors and reduce meadow trampling, and/or reroute trails away from the problem areas. Fill ditches not serving current operational needs using adjacent soil or pond-and-plug techniques. Manually or mechanically remove conifer seedlings and saplings from meadows.
- **Abandoned infrastructure in meadow and riparian habitat:** Remove abandoned infrastructure (including tiles, pipes, and abandoned roads) from meadow, riparian, and floodplain habitat. Decompact soils, remove fill, and re-vegetate with riparian species. Address areas including the former Eagle Creek/Rocky Point Sewage Plant site, Royal Arches Meadow, Cook's Meadow, western (closed) portion of former Lower Pines Campground, and the former lodge cabin/volunteer center at Yosemite Lodge.
- **Riparian restoration and river access:** Use brush layering and other re-vegetation techniques to repair localized riverbank erosion and lessen the scouring effect associated with bridges. Direct visitor use on the banks of the Merced River to stable and resilient river access points such as sandy beaches and low-angle slopes. Install fencing and signs to protect sensitive areas such as steep riverbanks and high use areas that exhibit vegetation loss and eroded soils. Protect re-vegetated areas with closure signs, fencing, and/or natural barriers such as rocks and logs. Riverbanks that would be addressed include those adjacent to Lower Pines and North Pines Campgrounds, Backpackers Camp, Housekeeping Camp, Yosemite Lodge beach access, Swinging Bridge Picnic Area, Sentinel Beach Picnic Area, Cathedral Beach Picnic Area, Devil's Elbow, riverside areas between Pohono Bridge and the El Portal Road/Big Oak Flat Road intersection, and along the Valley Loop Trail. Remove the pack stock trail along the river between the Concessioner Stables and Happy Isles, and re-direct stock use to the Valley Loop Trail. See Appendix E for a detailed description of ecological restoration actions.
- **Ahwahnee Meadow:** Restore meadow to natural conditions by restoring meadow topography, removing abandoned irrigation lines and associated fill material, filling in ditches, and re-vegetating with native meadow vegetation. Reconnect fragmented portions of Ahwahnee Meadow by removing conifers, and re-contour topography to increase the size of the meadow by 5.7 acres.
- **Bridalveil Meadow:** Address the condition of the stream in Bridalveil Meadow, which was channelized and now exhibits "headcutting," by inserting willow cuttings into disturbed sites in the stream channel, banks of the Merced River, and the adjacent meadow. Reestablish the riparian shrub layer in the meadow to restore the diversity of meadow and riparian habitat.
- **Native plant communities in river corridor:** Restore the mosaic of meadow, riparian deciduous vegetation, black oak, and open mixed conifer forest at specific locations in Yosemite Valley (67 potential acres). Management actions could include re-vegetation, prescribed fire, mechanical removal of conifers, and infrastructure re-design.
- **Declining amphibian and reptile species:** In accordance with NPS Policy, continue management toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize studies of the Western pond turtle and the foothill yellow-legged frog.

Additional localized concerns related to fire management and non-native species control would be addressed through actions prescribed in the Yosemite *National Park Fire Management Plan* (NPS 2004) and the *Invasive Plant Management Plan Update* (NPS 2010). ORV 6—the Merced River as an outstanding

example of a rare, mid-elevation alluvial river—presents additional localized concerns and associated actions to enhance riparian habitat.

Conclusion: Protecting and Enhancing Biological ORV 2 (Mid-Elevation Meadows and Riparian Habitat)

The Merced River's Biological ORV 2 currently has no adverse impact or degradation, but management concerns do exist and protective action is required. The *Final Merced River Plan/EIS* proposes additional actions to enhance Biological ORV 2 conditions in "Alternatives" (Chapter 8). Preliminary data collection indicates that a trigger point for the fragmentation standard (LPI_5) has been reached. Actions to address informal trailing impacts and fragmentation would be taken at all meadows where these triggers have been reached. Initial surveys of the riparian status indicator in 2010 indicate that degradation is not present, but management concerns are. The NPS would utilize temporary closures to allow natural recovery along riverbanks, re-direct visitor use to more stable and resilient river access points, establish fencing and signage to protect sensitive areas, and install boardwalks where appropriate. No conclusions regarding the riparian bird abundance are yet possible, as monitoring of this indicator has just begun.

To ensure this Biological ORV is protected through time, the NPS would continue to monitor the condition of the ORV using these three indicators. Monitoring would provide early warning of conditions that require management action before adverse impacts or degradation occur. These measurable conditions would trigger specific management responses, as described in Table 5-12, Table 5-15, and Table 5-19. The NPS would evaluate the effectiveness of the indicators regularly to assure that the combination of these metrics fully protect the ORV.

Biological ORV 3—Sierra Sweet Bay (*Myrica hartwegii*)

ORV 3—Sierra sweet bay (*Myrica hartwegii*) is a rare plant found on riverbanks of the South Fork Merced River.
Location: Segments 7 (Wawona) and 8 (South Fork Merced River below Wawona)
Rationale: In Wawona and downstream, the South Fork Merced River provides habitat for a rare plant, the Sierra sweet bay (*Myrica hartwegii*). According to the California Native Plant Society, it has a limited distribution in California, occurring in only five Sierra Nevada counties.. In Yosemite, it occurs exclusively on sand bars and riverbanks along the South Fork Merced River downstream from Wawona and along Big Creek.
Management Objective: Manage the Sierra sweet bay population to protect the abundance of the population along the South Fork Merced River

Condition Assessment

ORV Condition at the Time of Designation (1987)

At the time of designation, botanists considered the Sierra sweet bay to be rare in Yosemite, but not threatened by local impacts.

Current ORV Condition

This population was initially mapped and censused in 2004 (Moore et al. 2010) and remapped and recensused in 2010 (Colwell and Taylor 2011). The Sierra sweet bay population in Yosemite National Park is in good condition (Colwell and Taylor 2011). The only known human impact is minor localized trampling associated with recreational river access near the Wawona Campground.

Management Indicator and Monitoring Program for ORV 3

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

Indicator – Sierra Sweet Bay Population Decline for ORV 3

Indicator Description

To monitor this species, permanent photo points would be established to monitor the integrity of the Sierra sweet bay habitat along the South Fork Merced River in the vicinity of the Wawona Campground. Comparison of repeat photos would be an effective method for assessing significant human disturbance of this ORV in the vicinity of high use sites.

Photo monitoring protocols should include the following measures:

- Standardizing camera specifications such as zoom, aperture, and tripod height
- Placing photo board (EX: 2 x 0.5 m fold-able board with 0.5 m stripes of white and blaze orange)
- Marking camera and photo board locations with labeled rebar outside of the river channel
- Including landmarks in the photos such as uniquely forked trees away from the riverbank or human-made structures

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The management standard for Sierra sweet bay would be achieved if the population is maintained at >80% of its current proportion to the reference stands. The management standard establishes a low tolerance for human-caused decline in population size so that population decline caused by human disturbance can be reversed if detected early. This species is adapted to spatial and temporal modifications to its habitat resulting from periodic hydrologic events, such as floods or from periodic fires. Resulting natural fluctuations in population size indicated by all populations declining in size by a similar amount would not be mitigated under this ORV. Also, population declines resulting from global environmental change (e.g., community shifts, disease, changing precipitation patterns affecting water flow), even if anthropogenic in origin, are beyond the scope of this plan and would not be mitigated under this ORV.

Adverse Impact

An adverse impact would be present if there is a human-caused decline of over 40% in Sierra sweet bay abundance along the high use segment of the South Fork Merced River, as compared with reference photographs.

Degradation

Degradation would be present if there is a human-caused decline of over 70% in the abundance score of Sierra sweet bay along the high use segment of the South Fork Merced River, as compared with reference photographs. A 70% decline in the abundance score is estimated to be a level of decline that would be difficult or impossible to mitigate without a significant input of resources.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Sierra sweet bay

Permanent photo points would be established to help assess habitat condition over time. Monitoring would occur every five years. The mapped extent of Sierra sweet bay completed in 2010 (Colwell and Taylor 2011) would provide the basis for locating monitoring sampling units and for comparisons through time. Table 5-21 describes the trigger that would inform managers that a response is required to avoid impacts on the ORV.

TABLE 5-21: MANAGEMENT ACTIONS AND TRIGGER POINT TO MAINTAIN DESIRED CONDITIONS FOR SIERRA SWEET BAY

Trigger Point at Which Action Would Be Taken	Required Management Actions (at least one action will be taken)	Rationale for Management Actions
Trigger: Decline of 15% in Sierra sweet bay abundance due to human causes across two monitoring periods.	Reduce localized human use of Sierra sweet bay habitat, such as by installing fencing or by redirecting use. Augment population by planting using cuttings or seeds from local population, and protect plants until establishment.	Because localized human use is the most likely source of human-caused decline in Sierra sweet bay population abundance along the South Fork Merced River, a reduction in human use would be likely to reverse a declining trend. Redirecting visitor use to areas away from the Sierra sweet bay would be expected to reduce the effects of trampling, and the addition of more individuals derived from this population would be expected to enhance population abundance. Both of these management responses would be likely to reverse a declining trend.

Management to Protect and Enhance Sierra Sweet Bay (ORV 3)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 3)

Table 5-22 compares the current condition of the Sierra sweet bay to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-22: CURRENT CONDITION OF SIERRA SWEET BAY (*MYRICA HARTWEGII*)

Metric	Current Conditions
Meets management standard: The population abundance is maintained at >80% of its current population to the reference stands.	The Sierra sweet bay population is in good condition, and the management standard has been met.
Management concern present: A decline of 15% due to human causes across two monitoring periods.	None present.
Adverse impact: A human-caused decline of over 40% along the high use segment of the South Fork Merced River.	
Degradation: A human-caused decline of over 70% along the high use segment of the South Fork Merced River.	

According to the population census work done in 2004 and again in 2010, the Sierra sweet bay population is in good condition. The management standard has been met.

Management Concerns and Protective Actions (ORV 3)

This population is currently in good condition, and management concerns are not present. Protective management action is not required at this time.

Localized Concerns and Enhancement Actions (ORV 3)

Enhancement actions are not required at this time.

Conclusion: Protecting and Enhancing Biological ORV 3 (Sierra Sweet Bay)

The Merced River's Biological ORV 3 currently has no adverse impact, degradation, or management concerns, based on 2010 surveys (Colwell and Taylor 2011). The NPS would monitor the condition of the Sierra sweet bay population to ensure early warning of conditions that require management action before impacts occur. The monitoring indicator for Sierra sweet bay is coupled with triggers for specific management responses.

GEOLOGICAL AND HYDROLOGICAL ORVS

This section describes the program to protect each Geological/Hydrological ORV as proposed in the *Final Merced River Plan/EIS*. Four Geological/Hydrological ORVs exist in the Merced River corridor, each related to specific segment(s) of the river (Table 5-23).

TABLE 5-23: GEOLOGICAL/HYDROLOGICAL ORVS AND ASSOCIATED INDICATORS

ORV Number and Key Resource	Segment(s)	Indicator to be Monitored through Time
4. Glacially-carved Canyon in Upper Merced River Canyon	1	None; the ORV is impervious to human disturbance
5. The "Giant Staircase"	2	None; the ORV is impervious to human disturbance
6. A Rare, Mid-elevation Alluvial River	2	The California Rapid Assessment Method (CRAM)
7. Boulder Bar in El Portal	4	None; the ORV is impervious to human disturbance

Geological/Hydrological ORV 4—Glacially-carved Canyon in Upper Merced River Canyon

ORV 4—The upper Merced River canyon is a textbook example of a glacially-carved canyon.
Location: Segment 1 (Merced River above Nevada Fall)
Rationale: This segment of the Merced River is characterized by a large-scale, glacially-carved canyon. The section of the Merced River above Bunnell Point, in particular, illustrates the relationship between geology and river course owing to its sweeping, glacially-carved granite canyon cradling the river.
Management Objective: Manage to allow natural processes to shape the landscape and associated geologic values.

Condition Assessment

ORV Condition at the Time of Designation (1987)

This Geological ORV was unaffected by human activities at the time of designation.

Current ORV Condition

Natural processes would continue to shape the landscape and associated geologic values. Human intervention has not perceptibly modified this Geological ORV.

Management Indicator and Monitoring Program for ORV 4

It is very unlikely that this ORV would ever be affected by human intervention. Because the ORV is essentially impervious to intended human activities, no indicator will be used to monitor it. For the same reason, management standard, adverse impact, and degradation are not defined for this ORV, and the NPS will not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

Conclusion: Protecting and Enhancing Geological/Hydrological ORV 4 (Glacially-Carved Canyon in Upper Merced River Canyon)

The Merced River's Geological/Hydrological ORV 4 currently has no adverse impact, degradation, or management concerns, and it is unlikely that this ORV would be affected by human intervention in the future. The NPS would not monitor the condition of this ORV.

Geological/Hydrological ORV 5—"Giant Staircase"

ORV 5—The "Giant Staircase," which includes Vernal and Nevada Falls, is one of the finest examples in the western United States of stair-step river morphology.
Location: Segment 2A (East Yosemite Valley)
Rationale: Dropping over 594-foot Nevada Fall and then 317-foot Vernal Fall, the Merced River creates what is known as the Giant Staircase. Such exemplary stair-step river morphology is characterized by substantial variability in river hydrology, from quiet pools, such as Emerald Pool, to the dramatic drops in the waterfalls.
Management Objective: Manage to allow natural processes to shape the landscape and associated geologic values.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The rocky cliffs, cascades, and broad valleys along the Merced River represent a nationally significant example of a glaciated landscape. Sierra Nevada landforms were well established before glaciation, and major stream drainages provided the avenues that the glaciers would later follow. The course of the present-day Merced River is determined by the path of glaciers that came and went during the geological epoch known as the Pleistocene (10,000 to 1.8 million years ago). These glaciers transformed valleys from V-shaped to U-shaped, left hanging valleys along their lower reaches, and deposited thick packages of glacial till, ultimately shaping the iconic landscapes for which Yosemite Valley and the upper Merced River are known. Most researchers agree that at least three major glacial advances, or stages, have taken place: the Tioga, the Tahoe, and a much older pre-Tahoe (possibly the Sherwin) (Huber 1989). The Tioga Glaciation is considered to have peaked around 20,000 years ago, but the precise timing of the earlier stages is still a topic of debate. Because these are massive landscape-wide natural events well beyond human control, this Geological ORV was unaffected by human activities at the time of designation.

Current ORV Condition

Natural processes would continue to shape the landscape and associated geologic values. Human intervention has not perceptibly modified this Geological ORV.

Management Indicator and Monitoring Program for ORV 5

It is very unlikely that this ORV would ever be affected by human intervention. Because the ORV is essentially impervious to intended human activities, no indicator will be used to monitor it. For the same reason, management standard, adverse impact, and degradation are not defined for this ORV, and the NPS will not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

Conclusion: Protecting and Enhancing Geological/Hydrological ORV 5 ("Giant Staircase")

The Merced River's Geological/Hydrological ORV 5 currently has no adverse impact, degradation, nor management concerns, and it is unlikely that this ORV would be affected by human intervention in the future. The NPS would not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

Geological/Hydrological ORV 6—A Rare, Mid-Elevation Alluvial River

This ORV integrates geological/hydrological processes and the condition of aquatic, riparian, and floodplain communities.

ORV 6—The Merced River from Happy Isles to the west end of Yosemite Valley provides an outstanding example of a rare, mid-elevation alluvial river.
Location: Segments 2A and 2B (Yosemite Valley)
Rationale: In Yosemite Valley, the Merced River is alluvial, characterized by a gentle gradient, a robust flood regime with associated large woody debris accumulation, and complex riparian vegetation. There are few examples in the Sierra Nevada of similar river morphology of this scale at this elevation (about 4,000 feet).
Management Objective: Protect and enhance natural geologic and hydrologic processes, such as overbank flooding and channel migration, which sustain river values such as meadow and riparian communities.

Condition Assessment

ORV Condition at the Time of Designation (1987)

Evidence, such as historical maps and floodplain topography, suggests the Merced River has always had a high rate of lateral erosion, which may have increased in response to human impacts, such as trampling along the banks. Although the alluvial reach of the Merced River in Yosemite Valley has been relatively free-flowing compared with most rivers in California, this segment was the most impacted reach of the river within the park, especially in east Yosemite Valley floor between Clark's Bridge and Sentinel Bridge. A small dam spanned the river at Happy Isles. Between 1919 and 1986, visitor trampling along the banks between Clark's Bridge and Sentinel Bridge damaged riparian vegetation to the point that the river channel widened by an average of 27% and by more than 100% in some locations. In 1987, 39% of the Yosemite Valley segment was actively eroding. Downstream in the west Valley, 25% of the banks were actively eroding. A strong association was found between levels of human use around campsites and river access points, the loss of riparian vegetation cover, and accelerated bank erosion (Madej et al. 1991).

Furthermore, in 1879, large boulders were blasted to deepen and widen the river gap through the El Capitan moraine (Milestone 1978). As a result, the extent and frequency of flooding in the upstream meadows were reduced within approximately three to four miles of the moraine (approximately up to Superintendent's Bridge) leading to drier conditions and loss of wetlands.

Since the 1870s, park managers have removed large wood, such as downed trees and logjams, from the river to reduce flood risk near bridges and to facilitate road construction and river recreation. Large organic matter contributes to channel *roughness*, which slows the river's flow, dissipating its energy. The practice of removing large wood has encouraged faster, more erosive flows and promoted vertical channel erosion, referred to as downcutting, rather than the point bar creation, lateral migration, and avulsion typical of alluvial rivers. The practice also contributed to channel simplification, creating a more homogeneous river. An inventory of large wood was done shortly after the river's 1987 designation (Madej et al. 1994). This study found 12 pieces of wood per kilometer in the upper study reach (between Clark's Bridge and Sentinel Bridge) and 29 pieces per kilometer in the lower reach (comprising 1.6 miles upstream of El Capitan Bridge).

Certain bridges spanning the river have effects on its alluvial nature. Hydraulic constrictions were especially pronounced at three arch bridges built in the 1920s: Stoneman, Sugar Pine, and Sentinel bridges (Madej 1991).

Restrictive bridges cause eddy currents upstream and downstream that lead to bank erosion. Additionally, accelerated flows through the narrow opening have scoured the channel bed near bridges and resulted in bar formation downstream and river migration. Bridges also created hard points that anchored channel migration, preventing channel evolution. Some bridges, such as Sugar Pine Bridge, created such strong confinement that they appear to have increased the potential for channel avulsion by substantially eroding and widening naturally-occurring cutoff channels. The impacts of some of these bridges were exacerbated by the elevated road causeways leading to them, which intercepted and concentrated floodplain flows at high water.

In Segment 7 at the time of designation, bridges on the South Fork Merced River included the Swinging Bridge upstream of Wawona; the historic Wawona Covered Bridge, a timber-framed covered bridge; and the South Fork Bridge (Wawona Road). At the time of designation, the South Fork Bridge was a narrow bridge that has since been replaced. The original South Fork Bridge had unreinforced masonry cobble abutments and piers within the channel of the South Fork Merced River and created scour holes in the immediate vicinity of the abutments.

Current ORV Condition

Segment 2 is the most complex stretch of the Merced River because it includes Yosemite Valley, which hosts the majority of Yosemite's current 4 million annual visitors. Segment 2, therefore, incorporates the greatest number of management actions but also the most historic impacts (usually the reasons for the management actions) since designation, as presented here:

- Localized riverbank restoration projects have been implemented since 1987 at Housekeeping Camp, North Pines Campground, Sentinel Bridge, former Lower River Campground, and the original El Capitan Picnic Area. In addition, the Happy Isles Dam was removed in 2004. Restoration techniques included soil decompaction, re-vegetation, bioengineering stabilization, riprap removal, and fencing installation. Under current conditions, large wood continues to be managed, although less aggressively than in 1987 conditions. Large wood is maneuvered to riverbanks in the designated rafting area from Stoneman Bridge to Sentinel Beach, a practice considered best management due to the presence of frequent recreational rafting. In part because such wood is not removed from the river (as before), Cardno ENTRIX (a consulting firm working for Yosemite) found that in the upper reach, wood loading had increased from 19 to 70 pieces per mile, while in the lower reach the load had increased from 47 to 97 pieces per mile. This increase was also attributed to bank erosion and wood recruitment resulting from the 1997 flood. Within Yosemite Valley, wood loading varies, with the highest levels found in the Happy Isles reach; it is likely still below levels found in comparable natural settings, with a level of approximately 26%-35% of that found in a similar study of unmanaged watersheds in the eastern Cascades (Cardno ENTRIX 2012).
- Yosemite Valley's historic bridges (and some historic abutments associated with two former bridges at Happy Isles) continue to produce effects that reduce the river's alluvial nature, similar to constrictions at the time of designation. Following the 1997 flood, the Happy Isles Gauge Bridge was removed from the channel, and Sentinel Bridge was reconstructed upstream of its original location. Sugar Pine, Ahwahnee, and Stoneman bridges (all historically significant arch bridges) continue to produce major hydraulic constrictions during high water events. The elevated causeway (a multi-use trail) connecting Sugar Pine and Ahwahnee bridges exacerbates these effects. At Sugar Pine Bridge, the bridge's small opening diverts some river flow into a cutoff channel. Greater flow and a steeper slope in the cutoff channel has led to substantial widening since 1919, increasing the potential for avulsion of the main channel in this location. At other bridges—even some of the non-arch bridges like Housekeeping and Swinging bridges—large scour holes have developed. Superintendent's Bridge, similarly, disrupts flow and results in the formation of artificial rapids. Riverbank erosion and widening in Segment 2 have continued to occur since the time of designation. High levels of human use have exacerbated natural bank erosion, particularly on the

outside of the meander bend near Sentinel Beach Picnic Area. Human use has also contributed to channel widening on both river banks between Swinging Bridge and El Capitan Picnic Area and on the outer bends between El Capitan Picnic Area and El Capitan Meadow (Cardno ENTRIX 2012).

Although several of the structures affecting the river's alluvial nature have been removed, the fundamental causes of channelization remain to some degree: large wood removal from the channel, bridge confinement, and continued bank erosion, as well as the bank revetment (e.g., riprap) discussed above under the free-flow discussion. These have the effect of diminishing the river's alluvial nature in some stretches where it more resembles a river with weirs on it.

Management Indicator and Monitoring Program for ORV 6

The status of riparian habitat, as measured by the California Rapid Assessment Method (CRAM) (Collins et al. 2008) would be used to monitor the condition of this ORV through time. This is one of the same indicators used to monitor ORV 2. The indicator, management standard, definitions of adverse impact and degradation, monitoring program, and trigger points for management response are the same as ORV 2, as described earlier in this chapter.

Management to Protect and Enhance A Rare, Mid-Elevation, Alluvial River (ORV 6)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 6)

As noted in the discussion of ORV 2, surveys in 2010 found that about 80% of sites attained a minimum CRAM score of 0.71. About 20% of the riparian area along the Merced River in Yosemite Valley was found to be in low condition. These impacts were highly localized and would be mitigated once ecological restoration actions are implemented.

Management Concerns and Protective Actions (ORV 6)

Management concerns have occurred because monitoring results indicate Trigger Points 1 and 2 identified in Table 5-15 above have been exceeded.

To address these management concerns, the NPS will:

- Re-vegetate riverbanks between Clark's Bridge and Sentinel Bridge with native riparian shrubs and trees. Utilize temporary closures to sensitive resource areas to allow natural recovery along riverbanks.
- Strategically place wood according to Yosemite Directive #31, promoting bar formation and natural channel narrowing.
- Re-direct visitor use to more stable and resilient river access points such as sandbars, and designate formal river access sites. Establish fencing and signage to protect sensitive areas; install boardwalks where appropriate, and actively re-vegetate where needed.
- Establish Riparian habitat buffers: Establish a riparian buffer and prohibit new development along both sides of the Merced River within 150 feet of the ordinary high water mark. Move the Yosemite Village Day-use Parking Area 150 feet north of the ordinary high water mark.

- Remove all campsites within 100 feet of the ordinary high water mark. Restore riverside areas of Backpackers, North Pines, and Lower Pines campgrounds to natural riparian conditions.
- Construct hardened structures at designated river access points where needed to facilitate and concentrate safe visitor access. Fence and sign sensitive areas and reestablish riparian vegetation.
- The action alternatives include a variety of actions to address the effects of the bridges, from removal to further study.

Localized Concerns and Enhancement Actions (ORV 6)

Localized concerns associated with this river value include infrastructure within the bed and banks of the river and bridges. The following actions would take place under Alternatives 2-6 to address these concerns:

- ***Footings at the former Happy Isles footbridges***. Remove former footings from the bed and banks of the Merced River. Re-vegetate denuded informal trails.
- ***Base of the former gauging station at Happy Isles***. Remove the gauge base from the bed and banks of the Merced River. Re-vegetate denuded areas.
- ***Pohono Bridge Gauging Station.*** Move the gauging station north of the river outside of the bed and banks of the river. Re-vegetate denuded areas.
- ***Housekeeping camp units***. Remove 34 Housekeeping camp units located within the ordinary high water mark.
- ***Pathway through Leidig Meadow***. Replace a section of paved trail in Leidig Meadow (within ordinary high water mark of the river) with an elevated boardwalk or a series of box culverts.

Conclusion: Protecting and Enhancing Geological/Hydrological ORV 6 (A Rare, Mid-Elevation, Alluvial River)

The Merced River's Geological/Hydrological ORV 6 currently has no adverse impact or degradation, but management concerns do exist and protective action is required. The *Final Merced River Plan/EIS* proposes additional actions to enhance Geological/Hydrological ORV 6 conditions in "Alternatives" (Chapter 8). For example, in riparian zones under all alternatives, the NPS would direct river use to more stable and resilient access points, protect sensitive areas, and remove or relocate campsites within 100 feet of the ordinary high water mark.

To ensure this ORV is protected through time, the NPS would monitor the condition of the ORV using the status of riparian habitat as an indicator and the CRAM methodology (the same methodology used in ORV 2), and take specific actions should conditions reach trigger points. These trigger points are selected to inform managers well in advance of adverse impacts or degradation on this ORV.

Geological/Hydrological ORV 7—Boulder Bar in El Portal

ORV 7—The boulder bar in El Portal was created by changing river gradients, glacial history, and powerful floods. These elements have resulted in accumulation of extraordinarily large boulders, which are rare in such deposits.

Location: Segment 4 (El Portal)

Rationale: When river gradients lessen, rivers lose the energy needed to transport larger sediments. In such areas, bar-type deposits, such as the large boulder bar at the east end of El Portal, are built up. This is no ordinary boulder bar, however, for it contains massive boulders over a meter in diameter and weighing many tons. It is the combination of boulder availability, the steepness of the river in the gorge, the major change in gradient at El Portal, and the size of the Merced River's peak floods that enable the river to build such a boulder bar. As illustrated by the January 1997 flood, the Merced River continues to sort and build this bar, providing evidence in all seasons of its potential power.

Management Objective: Manage to allow natural processes to shape the landscape and associated geological values.

Condition Assessment

ORV Condition at the Time of Designation (1987)

This Geological ORV was unaffected by human activities at the time of designation.

Current ORV Condition

Additional large boulders were deposited by a natural flooding event in 1997.

Management Indicator and Monitoring Program for ORV 7

It is very unlikely that this ORV would ever be affected by human intervention. Because the ORV is essentially impervious to intended human activities, no indicator will be used to monitor it. For the same reason, management standard, adverse impact, and degradation are not defined for this ORV, and the NPS will not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

Conclusion: Protecting and Enhancing Geological/Hydrological ORV 7 (the El Portal Boulder Bar)

The Merced River's Geological/Hydrological ORV 7 currently has no adverse impact, degradation, nor management concerns, and it is unlikely that this ORV would be affected by human intervention in the future. The NPS would not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

CULTURAL ORVs

The continuum of human use along the Merced River and South Fork Merced River encompasses millennia of diverse peoples, cultures, and uses. American Indian and late 19th-century American cultures flourished along these rivers because they provided reliable, year-round water in extraordinary settings. Evidence that reflects trade, travel, and settlement patterns abounds in an intricate and interconnected landscape of

archeological sites, traditional use sites, and historic resources representing this cultural history. The ongoing cultural traditions of contemporary American Indians and other ethnic heritages are linked through space and time to their respective prehistoric and historic pasts via these ethnographic and cultural landscapes. This landscape holds outstandingly remarkable scientific, interpretive, and cultural value for traditionally associated peoples and the public. This section describes how the NPS would protect and enhance the Cultural ORVs as proposed in the *Final Merced River Plan/EIS*. Each ORV is related to specific segment(s) of the river (Table 5-24). They constitute seven ORVs, from ORV 8 to ORV 14.

TABLE 5-24: CULTURAL ORVS AND ASSOCIATED INDICATORS

ORV Number and Key Resource	Segment(s)	Indicator to be Monitored through Time
8. Yosemite Valley American Indian ethnographic resources	2A and 2B	1. Meadow fragmentation due to the proliferation of informal trails 2. Status of riparian habitat 3. California black oak – number of adults and ratio of saplings to adults
9. The Yosemite Valley Archeological District	2A and 2B	1. Condition of Yosemite Valley Archeological District
10. Yosemite Valley Historic Resources	2A and 2B	1. FMSS Condition Assessments
11. The El Portal Archeological District	4	1. Condition of El Portal Archeological District
12. Regionally rare archeological features along the South Fork Merced River at archeological sites with rock ring features	5	1. Condition of archeological sites
13. The Wawona Archeological District	5, 6, 7 and 8	1. Condition of Wawona Archeological District
14. The Wawona Historic Resources	7	1. Condition Assessment

The characteristics of the Cultural ORVs related to their condition are based on the same seven aspects of integrity that contribute to the National Register eligibility of each ORV element: location, design, setting, materials, workmanship, feeling, and association. *Location* is the place where the historic property was constructed or where the historic event occurred. *Design* is the combination of elements that create the form, plan, space, structure, and style of a property. *Setting* is the physical environment of a historic property. *Materials* are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. *Workmanship* is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. *Feeling* is a property's expression of the aesthetic or historic sense of a particular period of time. *Association* is the direct link between an important historic event or person and a historic property (NPS 1997d). Specific examples of the characteristics evidencing the condition of the Cultural ORVs include, but are not limited to:

***Archeological Sites*:** Archeological sites reflect millennia of human use and cultural evolution in relation to the river. Prehistoric and historic resources in the Yosemite Valley and Wawona Archeological Districts include American Indian villages, camps, and special purpose sites dating from at least 6,000 years ago to a period of historical occupation. In the El Portal Archeological District, some resources may be as old as 9,500 years. Benchmarks of condition for archeological sites are primarily concerned with the *in situ* preservation of intact artifacts and features (the attributes of location, design, and setting discussed above), so that spatial associations between site components can be observed in surface and subsurface assemblages. The integrity of features—such as pictographs, rock rings, or rock alignments—are judged on the clarity with which the outline, form, content and purpose of such features can be delineated. Additions of cultural elements not related to the site (e.g., modern campfire rings, trails, roads, graffiti, buildings, or

structures) can negatively affect the integrity of an archeological site's setting, association, and feeling. Historical remains can provide clear evidence of former use and association and may retain integrity as archeological resources, such as the physical remains of U.S. Army Cavalry Camp A.E. Wood.

As a regular part of ongoing archeological research, inventory, and accountability, Yosemite utilizes the Archeological Site Management Information System (ASMIS). Throughout the NPS, ASMIS is the primary monitoring tool for the condition of archeological sites, documenting site stability, threats, disturbances, treatments, and management actions, as well as providing descriptions and locations for all known archeological sites in the park (NPS 2005, 2007). The ASMIS condition assessment (i.e., "good," "fair," "poor," "unknown," or "destroyed") addresses the stability of a site compared to the previous site visits, but is not an indicator of cumulative impacts over time (Middleton [NPS] 2008). The disturbance severity level assessed for a given site is determined through the combined assessment of individual disturbances (NPS 2010c). This component of the ASMIS data system is determined independently of site condition and reflects a cumulative impact level that the site has sustained (Darko 2011).

***Ethnographic Resources*:** Traditionally associated American Indians assign strong spiritual value to the Merced River and Yosemite Valley, continuing their sense of place and cultural association with the river that is both a destination and a place of refuge. American Indians attached names and stories to geologic and other features in the Merced River corridor and consider many of these to be sacred or of spiritual significance. Villages or campsites were sited along the river to take advantage of seasonal resources, riparian plant species, or migrations of game animals. The integrity of the association with the community's cultural practices and beliefs is a critical consideration in assessing the condition of the ethnographic resources in Yosemite Valley. Benchmarks for the integrity of this component of the Cultural ORV in the Segments 2A and 2B could include unobstructed views of and/or access to sacred or significant geologic features, maintenance of and access to healthy populations of traditional ethnobotanical resources, and preservation and access to archeological remains or locations of historic, spiritual, or traditional significance.

***Built Environment*:** Conditional benchmarks for the historic-era built environment include:

- continuity of original uses (association)
- maintenance of original physical form and materials (design, workmanship, and materials)
- a feeling of related association between the resource and contemporaneous elements (location, setting, feeling, and association)

Cultural ORV 8—Yosemite Valley American Indian Ethnographic Resources

ORV 8—Yosemite Valley American Indian ethnographic resources include a linked landscape of specifically mapped traditional-use plant populations, as well as the ongoing traditional cultural practices that reflect the intricate continuing relationship between indigenous peoples of the Yosemite region and the Merced River in Yosemite Valley.

Location: Segments 2A and 2B (Yosemite Valley)

Rationale: Yosemite Valley Native American ethnographic resources include relatively contiguous and interrelated places that are inextricably and traditionally linked to the history, cultural identity, beliefs, and behaviors of contemporary and traditionally-associated American Indian groups. These areas include specifically mapped traditional plant gathering areas rooted in the history of traditionally associated peoples that are important to maintain and continue their cultural identity (Bibby 1994; Parker and King 1998). The traditional use plants gathered at such areas within Yosemite Valley comprise a complete system that is culturally significant. Because this ORV is the ethnographic system itself, which is fundamentally river-related, it includes some non-river related traditional use plants.

Management Objective: Maintain ethnographic resources, and encourage future propagation to meet cultural restoration purposes to the extent ecologically feasible. Support access for traditional practitioners and other traditionally associated American Indians through the administrative elements of the user capacity and non-recreational tribal pass programs, and ongoing consultation with traditionally associated tribal groups to ensure the success of these programs.

Condition Assessment

Condition at the Time of Designation (1987)

The landscape of Yosemite Valley is a product of both natural and cultural processes. Many of the meadow and riparian species of this landscape are important ethnographic resources. While natural processes, such as those that drive hydrological functions, have shaped the meadow complexes of the Merced River, cultural processes including American Indian burning to promote hunting and gathering have also shaped the Yosemite Valley landscape. Vista clearing to maintain views of the iconic scenery in Yosemite Valley also affected the condition of the landscape. The nearly pure stands of black oak are a prominent component of the Yosemite Valley Ethnographic ORV. Similar to meadows in Yosemite Valley, American Indians actively managed these Yosemite Valley oak groves. This management likely included burning or hand pulling to discourage conifer encroachment and undergrowth, deer control, and planting. The purpose of this active management was to ensure a good harvest of acorns, which was an important part of American Indian diets.

The federal government policy of Indian removal was gradually implemented in Yosemite over many decades, with the final residents evicted late in the 20th century. American Indian practices that fostered the propagation of desired plants, including oak trees, ended in the mid-1800s, well before their final removal from Yosemite. Seasonal burning, selective pruning, tilling, timely harvesting, and propagation were the primary tools they used; the discontinuation of these meant that by 1987, mature individual oak trees were being encroached upon by conifers, with low recruitment (germination and growth to adult trees) (Anderson 2005).

During this same time period, the newly arrived settlers and then park managers cleared vegetation for construction of facilities, homesteaded, farmed, and grazed range animals in what used to be traditionally used meadow and oak habitat (Bibby 1994). These actions furthered the decline of oak and other desired species, with an overabundant deer population exacerbating the effect in more recent years (deer overbrowsed oak seedlings, causing poor recruitment). The introduction of non-native plant species also

encroached on populations of traditional use plants in Yosemite Valley at the time of designation. All of these changes have likely led to alterations in the abundance and integrity of ethnographic resources.

Current ORV Condition

Many of the impacts to this ORV identified at the time of designation continue to the present, though the current NPS preservation mission encourages ongoing cultural connections between traditionally associated American Indian communities and ancestral park lands by facilitating the continuation of important cultural practices, religious ceremonies, and unimpeded access to sacred sites (Bibby 1994). Recognition of the ecological and ethnobotanical value of Yosemite Valley meadows has begun to result in restoration of some of these sensitive areas to conditions resembling those found in the period before intensive historic-era settlement (NPS 2010a). Several traditional use areas have been identified within Yosemite Valley, and some of the plant species within them are now actively being managed to encourage healthy plant populations (Bibby 1994; Deur 2007).

Management Indicator and Monitoring Program for ORV 8

This section discusses the proposed management program for this ORV, including the indicators to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. Three distinct indicators would be used to protect and enhance the Ethnographic ORV: a meadow fragmentation indicator, a riparian indicator, and a California black oak indicator. The meadow and riparian indicators have already been described in this chapter under ORVs 1 and 2, respectively. The California black oak indicator is introduced and described in this section. Although each indicator reflects different aspects of the ethnographic ORV and different potential impacts, they would all be evaluated on a regular basis to ensure that the combination of these metrics protects the Ethnographic ORV.

Indicator 1 – Meadow Fragmentation Due to the Proliferation of Informal Trails for ORV 8

Some of the plant populations constituting this ORV occur in Yosemite Valley meadows. To monitor the condition of meadow ethnographic resources, the meadow fragmentation indicator will be used, as described under Biological ORV 1 – Meadow Fragmentation due to the Proliferation of Informal Trails. The management standard, definitions of adverse impact and degradation, monitoring program, and trigger points are the same as described under ORV 2.[30] As noted in the current findings discussion under ORV 2, management concerns are present with this indicator, because several Yosemite Valley meadows have fragmentation indexes below the trigger values. That same discussion presents numerous protective actions that NPS will take to remedy this management concern.

Indicator 2 – Status of Riparian Habitat for ORV 8

Other plant populations constituting this ORV occur in Yosemite Valley riparian areas. To monitor these riparian ethnographic resources, the Status of Riparian Habitat indicator will be used, as described under

[30] Meadow fragmentation is used as an indicator for both ORVs 1 and 2, with identical definitions of management standard, adverse impact, and degradation, as well as identical trigger points. The management responses differ, because the meadows in Yosemite Valley are not in designated Wilderness. Because the plants comprising ORV 8 are found in those same meadows, ORV 8 will use the management responses prescribed for ORV 2.

Biological ORV 2 – Status of Riparian Habitat. The management standard, definitions of adverse impact and degradation, monitoring program, and trigger points are the same as described under ORV 2. As noted in the current findings discussion under ORV 2, management concerns are present with this indicator, because about 20% of the riparian area along the Merced River in Yosemite Valley is in low condition. That same discussion presents numerous protective actions that NPS will take to remedy this management concern.

Indicator 3 – California Black Oak for ORV 8

California black oak acorn has been an important staple food for American Indians in Yosemite Valley for millennia (Anderson 1991; Hull and Moratto 1999). Cultural knowledge regarding its preparation has survived strongly among the contemporary associated tribes and groups, reflecting its importance (Bibby 1994). Although black oak acorn is no longer a staple food, it has become symbolic of ancestral traditions and an important aspect of contemporary culture. For example, acorn soup is prepared for special occasions, especially traditional gatherings and ceremonial events. Several of the former inhabitants of the last American Indian village in Yosemite Valley recall gathering acorns with their parents and/or grandparents, attesting to the multi-generational historical and place-based personal connections between black oaks and the people. Certain groups of trees, or even individual trees, continue to be associated with particular individuals who gathered in historic times (Bibby 1994).

The current structure of the California black oak population in Yosemite Valley follows a familiar pattern for many oak species throughout California – a peak frequency in the younger adult size class but few, if any, saplings and pre-adults. For one or more reasons, survivorship from the seedling stage into the larger sapling and young adult stages is very low for many oak species. This apparent lack of regeneration (also known as recruitment) in oak species is a widespread pattern in California (Holzman 1993; Swieki et al. 1993; Garrison et al. 2002), the United States (Loftis and McGee 1992; Russell and Fowler 1999), and other parts of the world (Watt 1919; Shaw 1968; Saxena and Singh 1984; Singh et al. 1997; Abrams et al. 1999). Many factors have been proposed to account for the poor regeneration or lack of survivorship from seedling to sapling, leading to the absence of saplings and young adults (Tyler et al. 2006). Little data exist on the structure of black oak populations throughout its distribution in California and Oregon (Tyler et al. 2006), but some recent data from Yosemite Valley (Angress 1985; Kuhn and Johnson 2008; Ripple and Beschta 2008) and anecdotal accounts indicate the black oak population structure there also resembles those of others where regeneration is lacking or very low.

Although black oaks may be an exception, a typical size class frequency distribution for many tree species is one called the reverse-J curve where the smallest size classes (i.e., seedlings and saplings) have the most individual trees, each larger size class (i.e., saplings, adults) has fewer individual trees, and the largest size class (i.e., adults) has the fewest number of trees (Harper 1977). This demographic structure can be caused by a number of processes including density-dependent competition for limited resources such as light, water, and nutrients, and predation that all result in differences in rates of establishment, growth, and mortality. In the early life stages (i.e., smaller size classes), mortality rates are high, with a small proportion of a size class surviving into the next, larger size class. Mortality rates decrease as individuals get older. Once a tree becomes large enough, mortality rates decline considerably and most then live to an old age.

A leading hypothesis to explain the commonly found lack of regeneration in oaks and other species in protected areas is that ungulates (deer or elk) are browsing heavily on the seedlings, leading to high mortality rates. This hypothesis is supported by considerable research and observations from Yosemite (Dixon 1944; Gibbens and Heady 1964; Heady and Zinke 1978; Kuhn and Johnson 2008; Ripple and Beschta 2008),

California (Kuhn 2010), other parks (Wolf and Cowling 1981; Hebblewhite et al. 2005; Bestcha 2005; Ripple and Bestcha 2006), and the United States (Stromayer and Warren 1997; Waller and Alverson 1997). Cote et al. (2004) offer an excellent literature review on the impacts of abundant deer populations on many forest tree species. It has long been known and documented that protected areas such as national parks may contain high densities of ungulate species such as deer and elk (Cahalane 1941; Leopold et al. 1963; Porter and Underwood 1999).

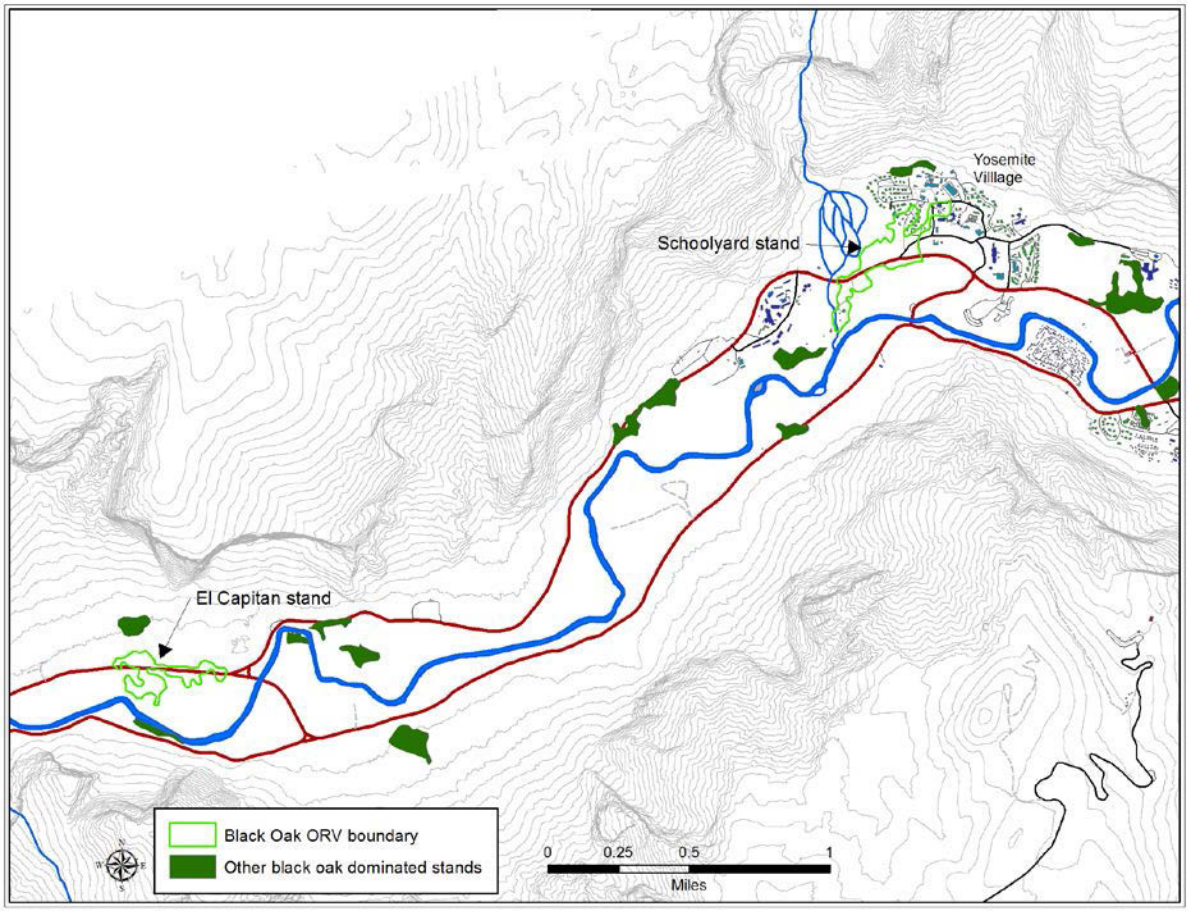
Indicator Description

This indicator has two components to monitor the status and long-term health of adults in two key stands of black oaks in Yosemite Valley, the Schoolyard and El Capitan stands (Figure 5-4). These stands cover a total area of 44.7 acres (18.1 hectares). The schoolyard stand is 28.2 acres (11.4 hectares) and contains approximately 134 adult black oaks, while the El Capitan stand is 16.5 acres (6.7 hectares) and contains approximately 282 adult black oaks. These stands would be monitored by tracking both the number of adults (or density) over time, and the ratio of saplings to all adults. Together, these two components provide a quick but informative look at the status and long-term health of the stands. The first component of the indicator will be used because the number of adults should stay relatively steady over time to maintain the quality and character of the woodlands and for reproduction. Although uncertain and variable, California black oaks likely become reproductive adults when they reach a size of 10 to 20 cm diameter at breast height (dbh). Although many individuals in the "sapling" stage (<20 cm dbh) produce acorns and are technically adults, adults are defined as individuals ≥ 20 cm dbh. The number of adults in these two stands has likely been relatively stable in the recent past, though there continues to be slow and perhaps punctuated adult mortality. The number of adults should not experience a significant decline.

As with adult survival, there should also be adequate recruitment into the critical sapling stage to maintain stand health. Between 1.3 meters (the height at which dbh measurements can be taken) and 2.0 meters in height, saplings are able to escape deer browsing and survival rates are much higher than for earlier stages of growth. Thus, saplings are defined as individuals > 1.3 meters tall and < 20 cm dbh. The part of the indicator measuring the ratio of saplings to adults is intended to measure this component of stand health. Based on the assumption that California black oak follows an expected demographic frequency distribution (based on the common reverse-J curve model), there should be many more saplings than the number of adults in the largest size classes. However, it is possible that black oaks and even oaks in general have highly episodic recruitment (i.e., occurring at very irregular intervals). This would create a population size structure frequency distribution with multiple peaks and troughs. Existing data indicate that there has not been strong episodic recruitment in at least the last 90 years. While recruitment may still be episodic, it is unlikely that episodes occur on time scales of 90 years or longer. Given the current size structure of the Yosemite Valley black oak population and the extensive research on the effects of ungulates on oak and other tree population demographics, it is likely that the pattern of very low recruitment in the last 90 years is not a naturally occurring pattern.

This indicator, its standards, and any management actions taken only apply to the two California black oak stands defined in the cultural traditional use plants ORV: the schoolyard stand and the El Capitan stand.

Figure 5-4: Boundaries of the Two Stands for the Black Oaks ORV Indicator. Included are other areas where black oaks are the dominate canopy species in Yosemite Valley.



Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

There are two components to the management standard for the schoolyard and El Capitan stands: 1) the number of adults, and 2) the ratio of saplings to non-saplings (or adults) for all black oaks taller than 1.3 meters. For all individuals defined as adults, the management standard is at least 85% of adults compared to the 2008 baseline.[31] For the ratio of saplings to non-saplings, the management standard is a ratio greater than 0.55. The expected size class frequency distribution, based on data collected by Kuhn and Johnson (2008), is a ratio of saplings to non-saplings of 0.65.[32] Because the management standard applies to the entire river segment, it considers the total number of adults and the ratio in the two stands; however, the

[31] Because the NPS has considerably more precise information about 2008 conditions than those at the time of designation, the more recent conditions provide a usable baseline for this indicator.

[32] This ratio was derived by constructing a best fit decaying exponential polynomial curve to the size frequency distribution of 325 trees using size classes from 20 cm up to 200 cm, separated into 10 cm bins. From the relationship derived from this frequency distribution, it is inferred that, for a stable population, the abundance of individuals < 20 cm dbh should be 65% of the abundance of all individuals ≥ 20 cm dbh.

trigger points described below apply to the individual stands, because trigger points are designed to maintain conditions above the management standard.

Adverse Impact

An adverse impact would be the number of adult California black oaks (i.e., ≥ 20 cm dbh) declining by at least 20% compared to the 2008 baseline.

Degradation

Degradation would be the number of adult California oaks (i.e., ≥20 cm dbh) declining by at least 25% compared to the 2008 baseline.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – California Black Oak

California black oak is a slow growing species, and adult mortality rates are also low (though quite variable year to year). Monitoring growth can be conducted on relatively long time scales while mortality should be monitored more frequently due to its episodic nature. The two key stands of black oaks in Yosemite Valley would be monitored annually for adult mortality while new recruitment and changes in sapling to adult ratios would be monitored less frequently (every three to five years). Monitoring methods should follow established demographic methods (such as Elzina et al. 2001).[33]

Table 5-25 below displays the trigger point and associated management actions. The first trigger point would be a decline in the total number of adult oaks of 15% in either (but not both) stands compared to 2008 baseline, or a decline in the sapling-to-non-sapling ratio to 0.55 or less in either (but not both) stands. Management actions to respond to trigger points would be active restoration, including deer and rodent exclusion for individual seedlings, saplings, parts of the stand, or all of the stand; planting acorns or seedlings; and possibly a reduction in visitor use.[34]

During ecological restoration, the success of management actions will be monitored annually and further actions taken to mitigate any failures. Young saplings will require protection from deer until they are tall enough to escape heavy browsing. Mortality rates of all seedlings and saplings will be monitored annually to ensure sufficient survival rates into larger size classes. Periodically (every 3 to 5 years), the current population structure can be compared to an expected frequency distribution based on data collected by Kuhn and Johnson (2008) to determine relative success of the restoration actions. Saplings and young adults will continue to experience some mortality as they grow larger. Depending on conditions, it will take approximately 55 to 85 years (the average is 69 years) (Kuhn and Johnson 2008; Ripple and Bestcha 2008) for California black oak to grow into the adult size classes (≥ 20 cm dbh) in Yosemite Valley. These age estimates are based on size-to-age relationships from 27 trees throughout Yosemite Valley (Ripple and Beschta 2008),

[33] When determining tree mortality, some degree of latitude and interpretation should be afforded those who are monitoring. Adult black oaks may enter into a period of slow decrepitude that may take decades before eventual mortality occurs. During this period, the tree will continue to survive and grow, but in a reduced form and stature. As long as the adult is still a contributing reproducer (producing acorns), it should be considered alive. If a decrepit adult is no longer reproductive, it may be considered dead for the purposes of this indicator.

[34] Deer protection can be applied to naturally recruited seedlings, and protection from deer and rodents can be applied to planted acorns or seedlings. Methods to protect planted acorns and seedlings have been used successfully in other restoration projects (Swiecki & Bernhardt 1991; Tyler et al. 2008) and can be applied in Yosemite.

and the size-to-age relationship within the two stands in question may differ somewhat from what has been reported here.

TABLE 5-25: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR CALIFORNIA BLACK OAK INDICATOR

Trigger Point at Which Management Action Would Be Taken	Required Management Actions (at least one action will be taken)	Rationale for Management Actions
Trigger Point: In either (but not both) stands, total numbers of adults decline by 15% OR the ratio of saplings to all non-sapling adults in that stand falls below 0.55.	Protect existing adults (particularly if the adult trigger is reached) Protect existing saplings (particularly if the ratio trigger is reached) Ecological restoration, primarily through planting of seedlings, possibly over a number of years Protect individuals of all age and size classes through fencing, removal of competing plants, fuel reduction, public awareness, signs, removal of facilities Reduce deer browsing Reduce rodent pressure Reduce public use	0.65 is the expected ratio, notwithstanding natural variability, and management action when the ratio reaches 0.55 allows for a declining trend to be reversed before the management standard is reached. Similarly, management action when adult decline reaches 15% allows for a declining trend to be reversed before the management standard is reached.

Management to Protect and Enhance Ethnographic Resources in Yosemite Valley (Indicator 3, ORV 8)

Current Findings Regarding Management Standard, Adverse Impact and Degradation (Indicator 3, ORV 8)

Table 5-26 compares the current condition of the California black oak to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-26: CURRENT CONDITION OF CALIFORNIA BLACK OAK

Metric	Current Conditions
Meets management standard: The number of adult oaks is at least 85% of the 2008 baseline, and the ratio of saplings to non-saplings is greater than 0.55.	
Management concern present: In either (but not both) stand, total numbers of adults decline by 15%, or the ratio of saplings to non-saplings in that stand falls below 0.55.	The El Capitan Meadow and schoolyard groves in 2013 had a sapling to non-sapling ratio of 0.10 and 0.12, respectively.
Adverse impact: A decline by at least 20% in the number of adults California black oaks (≥20 cm dbh) compared to the 2008 baseline.	None present.
Degradation: A decline by at least 25% in the number of adult California black oaks (≥20 cm dbh) compared to the 2008 baseline.	

Recent surveys of both the El Capitan Meadow and schoolyard groves found sapling to non-sapling ratios of 0.10 and 0.12, respectively (Kuhn 2013), for a combined segmentwide ratio of 0.11, requiring immediate ecological restoration to increase the number of saplings, as shown in Table 5-26. This ratio indicates that this ORV is not meeting the management standard with a management concern present.

Management Concerns and Protective Actions (Indicator 3, ORV 8)

Management concerns arise when a trigger point is reached, indicating that a river value does not meet management standards. As noted, a management concern is present with black oak recruitment rates.

To address this management concern, the NPS will introduce new seedlings into the affected stands and protect as necessary to ensure high survival rates, with a goal to establish enough saplings so the ratio of saplings to all adults improves to at least 0.65. This work has already begun in earnest for both groves.

Localized Concerns and Enhancement Actions (ORV 8)

Localized concerns related to ORV 8 involve park operations, invasive species, and park and infrastructure.

Park operations have triggered changes in ethnographic resources by disturbing traditional use plant populations or changing access to these places. Threats to traditionally used plant populations include invasive species such as Himalayan Blackberry (*Rubus armeniacus*), drainage and hydrology impacts to meadows, and erosion and revetments that affect riparian vegetation.

The *Final Merced River Plan/EIS* would enhance this ORV through the following actions:

- Ensure continuing coordination between traditionally associated American Indian tribes, groups, and traditional practitioners (through the Park American Indian Liaison) with law enforcement, fire management, interpretation, invasive species, ecological restoration, and facilities management programs.
- Develop operational guidelines for material staging areas, parking, etc. to protect ethnographic resources.
- Continue to document the cultural and religious significance of historic properties (i.e., sites, objects, structures, districts, etc.) for Yosemite Valley. Build upon focused mapping and condition assessments for traditional use plants and archeological sites. Work in collaboration with traditionally-associated American Indian tribes and groups, using staff expertise in cultural anthropology, botany, archeology and oral history. Compile existing information gathered during previous ethnographic studies, fill gaps in the historical record through research in archival repositories, update and expand the oral history documentation, and complete detailed field mapping.
- Address invasive plant impacts to traditionally used plant populations in some locations through ecological restoration actions in concert with the existing invasive plant management program.
- Restore and protect riparian areas, meadows, and hydrological resources to enhance traditional use plant communities.

Conclusion: Protecting and Enhancing Cultural ORV 8 (Ethnographic Resources in Yosemite Valley)

The Merced River's Cultural ORV 8 currently has no adverse impact or degradation, but management concerns do exist and protective action is required. Management concerns are present regarding all three indicators for this ORV: meadow fragmentation, riparian health, and California black oaks. As described above under Biological ORV 2, NPS will take many protective actions to reduce meadow fragmentation and to improve riparian vegetation health to meet the management standard. To address the management concerns regarding California black oaks, NPS will introduce new seedlings into the affected stands and protect as necessary to ensure high survival rates, with a goal to establish enough saplings so the ratio of saplings to all adults improves to at least 0.65. The *Final Merced River Plan/EIS* proposes additional actions

to enhance Cultural ORV 8 conditions in "Alternatives" (Chapter 8). To prevent future impacts, the NPS will monitor the condition of the ORV, continue to plant and foster sapling growth, and take specific actions should additional trigger points be reached once the ratio meets the management standard of 0.55. Trigger points will continue to inform managers well in advance if this ORV's condition continues to deteriorate.

Cultural ORV 9—Yosemite Valley Archeological District

ORV 9— The Yosemite Valley Archeological District is an unusually rich and linked landscape that contains dense concentrations of resources that represent thousands of years of human settlement.
Location: Segments 2A and 2B (Yosemite Valley)
Rationale: Drawn by the year-round availability of water and the diversity of plants available for sustenance in Yosemite Valley, people have inhabited the valley for thousands of years, leaving behind an exemplary collection of archeological sites in the Yosemite Valley Archeological District. Many pre-contact and historic-era archeological sites are identified in ethnographic literature and native oral traditions, providing a rare example of the long and continuing association of people and places. While the landscape itself provides exemplary documentation of land use practices, many of the individual sites contain exceptional information with the potential to interpret not only ancient lifeways, but also cultural change at the period of contact with Euro-Americans. In addition to this regional and state-wide scientific and interpretive value, the sites have value to American Indian tribes and groups as a connection to their ancestors and an important component of their cultural patrimony. Because the archeological sites within the Yosemite Valley Archeological District comprise a complete system that is culturally and scientifically significant, both river-related and non-river related archeological sites are included in this ORV. Furthermore, archeological sites contained within this district but existing outside of the river corridor boundaries contribute to the significance and integrity of the historic property and are therefore included in this ORV.
Management Objective: Ensure protection and enhancement of the Yosemite Valley Archeological District as a whole, and ensure that human impacts are not adversely affecting the district's essential character and integrity.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The archeological district nomination completed in 1979 indicates that archeological resources retained integrity despite administrative and facility-related impacts, visitor use-related impacts, and ecological process-related impacts. At the time of designation, the following impacts had been documented to sites within the Yosemite Valley Archeological District:

- Construction of historic and contemporary facilities such as roads, trails, buildings, and utilities
- Unauthorized excavation at one site; a damage assessment there determined that it still contained intact subsurface deposits (Mundy and Hull 1988)
- Informal trails
- Intentional or inadvertent movement of artifacts or feature elements (such as displacement of rock alignments)
- Soil compaction
- Bouldering/rock-climbing and camping impacts that included ground-disturbing actions
- Tree falls
- Bioturbation - The disturbance of soil by living things (e.g., rodent tunneling)

- Erosion
- Rockfall

Despite the impacts, these sites have been documented to contain intact cultural deposits, holding both information important to understanding regional pre-contact and historic-era American Indian lifeways, and the cultural patrimony of descendant American Indian tribes and groups.

Current ORV Condition

The same types of impacts that were occurring at the time of designation continue to affect this ORV. While the majority of archeological sites in Yosemite Valley retain a relatively high degree of integrity, many have been disturbed by human activity and natural processes, from both before and after designation (Hull and Kelly 1995). Slightly less than half (47%, or 56 sites) of Yosemite Valley Archeological District sites within the Merced River corridor are rated in "good" condition (i.e., are relatively stable and not subjected to continuing deterioration) according to their most recent assessment scores (ASMIS). An additional 33% (39 sites) are in fair condition, and 18% (22 sites) are in poor condition, or are continuing to deteriorate (see the discussion in the Cultural ORV introduction above for an explanation of the ASMIS definition of "site condition" and "disturbance severity level" attributes). The corresponding ASMIS disturbance severity levels for the visited sites show that 39% of the sites (47 sites) have low disturbance severity, with an additional 33% (39 sites) showing moderate disturbance severity, and 25% (29 sites) displaying severe disturbances (Darko 2011). Impacts may include soil compaction, vegetation damage, movement of artifacts, feature disturbance, and vandalism. Impact severity ranges from minor to severe, although most visitor-use impacts were characterized as minor or moderate. Seven sites were identified during recent visits as having experienced a moderate to severe degree of impact from visitor use (Middleton [NPS] 2009, 2010). One of the sites within the river corridor could not be relocated during a recent attempted field assessment (Darko 2011). The same types of impacts that were occurring at the time of designation continue to affect site conditions now.

Management Indicator and Monitoring Program for ORV 9

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

Indicator – Condition of Yosemite Valley Archeological District for ORV 9

The Yosemite Valley Archeological District is listed on the National Register of Historic Places (NPS 1978). The National Register of Historic Places (NRHP) defines an archeological district as "… a grouping of sites, buildings, structures, or objects that are linked historically by function, theme, or physical development or aesthetically by plan" (NRHP). Within the Yosemite Valley Archeological District, individual prehistoric sites form the collective character and significance of the district. Sites discovered after nomination would be evaluated and may be added to the district.

Indicator Description

The indicator that NPS selected for this ORV is archeological site condition, which is an aggregate of the condition of the archeological sites within the district.[35] Site condition includes the general physical state of the site and associated material remains. Other key components of site condition are site stability (the potential for physical deterioration over time) and site integrity (the ability to convey important scientific information, or the setting, feeling, and association of previous historical eras to researchers, the public, and traditionally associated peoples).

The indicator draws from the NPS Archeological Sites Management Information System (ASMIS) format (NPS 2007a, 2007b), supplemented with other measures designed to capture impacts specifically related to visitor and administrative use. ASMIS, a management database developed by the NPS, tracks a broad range of information about documented archeological sites. ASMIS functions as a tool to improve archeological resources preservation, protection, planning, and decision-making by parks and the NPS nationwide (NPS 2007b).

ASMIS quantifies impacts (disturbances) in two ways: first, the effect an impact has on site condition, and second, the severity of the damage caused by the impact. Effects on site condition are ranked on a descending scale:

- ***negligible,*** such as minor damage to the physical condition of the site, with little to no loss of scientific data potential or site integrity
- ***partial loss repairable***, for example, minor damage to the site that can be reversed or ameliorated through treatment or repair (such as careful removal of campfire rings or hand removal of fire fuel buildup)
- ***partial loss irretrievable***, found when more serious damage has occurred that cannot be repaired, such as partial collapse of a prehistoric rock feature triggered by human alteration, or removal of an artifact or features from its original context
- ***total loss irretrievable***, found in cases of complete loss of the resource, as in destruction of a site from fire or vandalism (NPS 2007a)

The severity of damage to a site is measured as either low, moderate, or severe, based on areal extent of disturbance, or proportional damage to the site's important characteristics (NPS 2007a; Bane 2011). These measurements take into consideration the site type, the value of the scientific data in the damaged area, and the overall damage to a site's integrity. Damage severity levels are ranked as low, moderate, or high; examples of what would constitute each severity level include:

- ***low damage severity level***: damage to a relatively small portion of an archeological site with few resources, or in an area that has been previously disturbed
- ***moderate damage severity level:*** disturbance to a relatively large portion of a site that has low scientific data value or has been previously disturbed, or disturbance to a small but scientifically rich portion of a site
- ***high damage severity level***: destruction of a unique character-defining feature such as a pictograph, or damage/destruction to a small but dense concentration of materials within a large site

The Archeology Visitor Use Program further refines the standardized ASMIS data categories by assigning disturbances to one of four causes: natural processes, park operations, visitor use, or unknown. Both "park

[35] Note that the ASMIS definition of "site condition" above is not directly applied here, although aspects of the ASMIS method (see below) are used.

operation" and "visitor" disturbances are included in total counts of human-caused site impacts. Park operations that have the potential to cause disturbance include road construction and maintenance, trail construction and use, utilities installation, building construction, controlled fire, ecological restoration, and scientific research. The most common types of potential "visitor" disturbances include camping impacts, creation of informal trails, climbing, and use by hikers and/or horses. Other less common types of possible "visitor" disturbances include damage to vegetation, damage to archeological ruins, stock use (picketing or corralling), soil compaction, dumping, off-road vehicle use, vandalism, and unauthorized collection of artifacts (looting). Unlike "natural" and "visitor" impacts, many impacts resulting from "park operations" that have occurred in the last two decades are considered "undertakings", and therefore have been addressed through regulatory compliance processes such as those addressing requirements of Section 106 of the NHPA, and NEPA, both of which involve consultation with tribal partners, evaluation under the National Register, and professional treatment.

Since 2007, the Archeology Visitor Use Program has annually monitored the range of visitor impacts and changes in site condition at a sample of archeological sites within the Tuolumne and Merced Wild and Scenic River corridors. Program methodology was originally modeled after similar archeology programs at NPS Flagstaff, Arizona, area monuments (Donnermeyer 2005; Gossart 2005) and Grand Canyon National Park (Dierker and Leap 2005, 2006), with subsequent modifications specific to Yosemite site types and visitation patterns (Middleton 2009). Project protocols were designed to fit within the larger Yosemite Visitor Use and Impact Monitoring Program framework and reporting standards. Sample sizes and selections follow a strict protocol detailed in the Visitor Use Impact Monitoring Program Field Guide (see NPS 2008a, 2008b, 2009a, 2009b).

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

For the Yosemite Valley Archeological District, the management standard is as follows: At least 85% of the sites determined to have high scientific data potential must be free from currently-identified serious human impacts, where these impacts have not already been addressed, or otherwise "mitigated" through regulatory processes. At least 80% of the documented sites determined to have low scientific data potential must be free from currently-identified serious human impacts, where these impacts have not already been addressed, or otherwise "mitigated" through regulatory processes.[36] Serious human impacts are single disturbances that have resulted in partial or total irretrievable loss at a site, where the loss represents "moderate" to "high" site damage levels; or a series of three or more disturbances that have resulted in irretrievable partial or total loss, where the loss represents "low" damage levels. The management standard is applied against a representative sample compiled from current monitoring data, assessed in five-year intervals.

In balancing visitor use and site preservation, some site disturbances can be acceptable if the site retains its overall physical integrity (Fairley and Downum 2000). For archeological sites with estimated low data potential (i.e., small sites with few materials and no diagnostic artifacts, sites with a single feature such as a bedrock mortar, sparse lithic scatters, or heavily deteriorated sites), some amount of irretrievable damage

[36] Estimates of data potential are based upon the best data currently available: ASMIS data potential assignments, definitions provided in Yosemite archeological reports, and Visitor Use Project site assessments. These estimates are preliminary, based largely on available surface archeological data, and subject to change based on future research (Bane 2011).

may be allowable. This is particularly true for site types that are relatively common in the district, such as small lithic scatters. The Management Standard provides for this sort of tolerance in accepting human impact disturbances at up to 20% of sites with low data potential (Donnermeyer 2005).

For sites estimated to hold high data potential (i.e., sites with multiple features, sites with diagnostic artifacts or dense artifact concentrations, documented historical sites, or sites with uncommon or unique attributes), the potential for impacts to cause resource loss is greater, and this in turn results in impacts that would be more noticeable at the district (or segmentwide) level. A serious human impact, or an accumulation of minor impacts, that results in irretrievable damage and loss at sites with high data potential is therefore less acceptable (Donnermeyer 2005). The management standard reflects this differential tolerance by accepting this level of damage at only 15% of sites with high data potential.

Adverse Impact

An adverse impact, as defined under WSRA, occurs when the number of sites free from current serious human impacts falls to 60% for sites with low data potential, and 70% for sites with high data potential, in a ten year monitoring interval.

Thus, an adverse impact is found when a higher level of serious impact has occurred at sites in the district with both low and high data potential over a ten year period of sampling. The 15% to 20% increase in serious impact serves as a warning of long-term downward trends in site condition, requiring stronger protective actions to prevent widespread site damages that would threaten the essential character of the archeological district (Donnermeyer 2005).

Degradation

The ORV would be considered degraded should the archeological district be impacted to the extent that it is no longer eligible for listing in the National Register of Historic Places. This would occur if the district no longer met the criteria for listing in the NRHP through deterioration and loss of integrity of the "qualities which caused it to be originally listed have been lost or destroyed" (NPS 1997, 2004). The significant qualities of this ORV are its ability to provide a comparative basis for regional archeological studies, for its ethnic (or cultural) significance to descendant American Indian populations, for its ability to contribute to the understanding of environmental and cultural history, and for public interpretation. These qualities are present in the number and variety of individual archeological sites and their intact deposits. A "degraded cultural resource" would typically no longer have status as a historic property (in this instance, a majority of the sites would be extensively damaged or destroyed), and its National Register status could not be restored through mitigation efforts.[37]

Monitoring Program to Prevent Future Adverse Impacts or Degradation- Condition of Yosemite Valley Archeological District

As required by the guidelines implementing WSRA, the NPS will conduct a program of monitoring and ongoing study during and following the implementation of the *Final Merced River Plan/EIS* to ensure that the Yosemite Valley archeological district river value is protected throughout the life of the plan. Impacts on

[37] Because this ORV is defined by archeological districts, where the Archeological ORV in the Final Tuolumne River Plan/EIS is defined corridorwide, the Final Merced River Plan/EIS uses loss of eligibility as degradation. A more precise definition is given in the Final Tuolumne River Plan/EIS because that ORV includes several districts.

archeological resources are irreversible, and their condition can never be enhanced. Even if all human impacts could be eliminated, a downward trend in the condition of archeological resources over time would be inevitable due to the effects of natural weathering. Condition assessments would be conducted at a sample of archeological sites within the district at periodic monitoring intervals, following the assigned assessment (ASMIS) site inspection schedule (NPS 2007). For some sites, monitoring would occur at a five-year interval; others would be assessed at ten- and fifteen-year intervals, with the schedule determined based on the sites' fragility, proximity to visitor facilities, etc. At five-year intervals, the collective monitoring data would be compiled and compared to the trigger point in Table 5-27 below to determine whether protective actions are necessary. This monitoring program thus allows for the type of feedback necessary for adaptive archeological site management (i.e., periodic, systematic analysis of site data, focused on management objectives) (Kintigh et al. 2007). This five-year interval for summary reporting and analysis is the minimum periodicity necessary to accurately capture human impacts at a meaningful chronologic and geographic scale (Bane 2011).

The national register nomination for the archeological district would be reassessed at 25-year intervals in order to verify that the district itself has not been degraded (such long reporting intervals for large historic districts are typical, as it can take decades for changes to occur). Table 5-27 lists the trigger point and specific management responses that would take place if the trigger point were to be reached.

TABLE 5-27: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR THE YOSEMITE VALLEY ARCHEOLOGICAL DISTRICT (CONDITION OF DISTRICT)

Trigger Point at Which Management Action Would Be Taken	Required Management Actions (at least one action will be taken)	Rationale for Management Actions
Trigger Point: The number of individual sites free from serious unmitigated human impacts falls to 90% or less for sites with low data potential, and falls to 95% or less for sites with high data potential in a monitoring interval.	1. Increased monitoring frequency for affected sites. 2. Increased management protection designed to counteract or minimize impacts, crafted to individual site specifications. Examples include: • Site documentation, research, testing, or NRHP evaluation; • Site stabilization, re-vegetation, trail reroutes, trail removal; • Increased public interpretation and education; • Increased education for local user communities such as residents or climbers; • Increased training for law enforcement in site damage recognition and protection; • NRHP re-evaluations and/or data recovery at affected sites; • Development of comprehensive site management plans for large, complex sites in developed areas. • Initiate hard closures of individual affected sites, utilizing increased visitor education about human impacts and the necessity for closures. Site closure regulations would be represented within the superintendent's compendium in order to allow legal enforcement. 3. At the districtwide level, NRHP nomination amendments to reflect changes in district integrity.	The trigger range is set at 10% above standard violation, allowing identification of individual problem sites and localized areas and timely prescriptive actions before management standard levels are violated. The trigger range was selected from sampling results for five years of site impact monitoring within the district, and is based on best professional judgment of thresholds necessary to retain desired management standard.

Management to Protect and Enhance Yosemite Valley Archeological District (ORV 9)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 9)

Table 5-28 compares the current condition of the Yosemite Valley Archeological District to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-28: CURRENT CONDITION OF ARCHEOLOGICAL SITES IN YOSEMITE VALLEY BASED ON MONITORING OF AGGREGATE CONDITION OF SITES

Metric	Percentage of Sites Free from Serious Human Impacts, 2007–11[a]		
	Location	High Data Potential Sites	Low Data Potential Sites
Meets management standard: *Sites with low data potential*: 80% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 85% of sites free from serious unmitigated human impacts.	Sample set of 60 sites (53%) of 113 sites relevant to the Yosemite Valley archeological value	95%	93%
Management concern present: *Sites with low data potential*: the number of individual sites free from serious unmitigated human impacts falls to 90% or less in a monitoring interval. *Sites with high data potential*: the number of individual sites free from serious unmitigated human impacts falls to 95% or less in a monitoring interval.	None present.		
Adverse impact: *Sites with low data potential*: 60% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 70% of sites free from serious unmitigated human impacts.			
Degradation: The archeological district is no longer eligible for listing in the National Register of Historic Places.			

NOTE:

[a] Impacts with partial loss irretrievable effects with moderate to severe damage levels or multiple (≥3) impacts with low damage levels.

As shown, current site conditions and human impact values for a sample of relevant Yosemite Valley Archeological District sites are drawn from a sample of 60 sites as part of the Archeology Visitor Use site monitoring program for the years 2007-2011. This represents 53% of the 113 sites. Over this five year period, 95% of high data potential sites and 93% of low data potential sites in the sample were considered free of serious human impacts, meeting the management standard for this ORV.

Management Concerns and Protective Actions (ORV 9)

Management concerns occur when the condition of a resource has reached the trigger point identified in Table 5-27 above. There are no management concerns associated with the Yosemite Valley Archeological District.

Localized Concerns and Enhancement Actions (ORV 9)

The following are the localized concerns regarding ORV 9:

- A stock trail passing through a midden deposit and a formal hiking trail near a rock art feature are causing impacts to cultural resources at archeological site CA-MRP-0046/47/74; modern graffiti also currently desecrates the rock art boulder.
- Rock climbing activities ("bolt ladder") at a rock shelter boulder are causing trampling of the near surface archeological deposit at CA-MRP-0082/H.
- Stock use and an operational staging area are currently impacting archeological resources at site CA-MRP-0052/H.
- Heavily used formal trails and informal trails, as well as illegal campfires, graffiti, and trampling are currently causing impacts to the prehistoric rock shelter and associated artifacts at archeological site CA-MRP-0057.
- Parking, rock climbing, camping, vandalism, human waste, fire rings and informal trails currently impact a prehistoric rock shelter and associated artifacts at site CA-MRP-0062.
- Camping and trampling are currently causing impacts to bedrock mortars at site CA-MRP-0080; impacts to these important archeological features also affect traditional cultural values.
- Rock climbing (bouldering) activities on a rock art boulder, and informal trails currently impact the archeological and ethnographic resources at CA-MRP-0158/309.
- Vehicular and bike traffic along a dirt access road are affecting surface and subsurface archeological resources at CA-MRP-0190/0191.
- Non-technical climbing on a large bedrock mortar is causing impacts to the archeological resource at site CA-MRP-0240/0303/H; visitor use on the bedrock mortar also affects traditional cultural values.

The following are proposed to address these localized concerns and enhance Cultural ORV 9:

- Achieve archeological resource protection by using natural features to conceal and divert foot traffic around sites, removing informal trails, removing climbing hardware, formalizing river and meadow access locations, and avoiding potential damage from ecological restoration practices by using noninvasive techniques wherever possible.
- Delineate roadside parking and divert foot traffic away from sites and into less sensitive areas.
- Develop site-specific treatments for the large, complex site at Yosemite Village; actions would be developed in the form of site management guidelines to avoid resource loss as a result of implementing proposed actions. This would guide new development and the rehabilitation or repair of existing facilities and/or redevelopment involving repair and maintenance of infrastructure, facilities and underground utilities to support visitation in a manner that is protective of the archeological site.
- Update the National Register nomination forms for all three archeological districts, and use this updated documentation to support more comprehensive management of the resources.

Conclusion: Protecting and Enhancing Cultural ORV 9 (Yosemite Valley Archeological District)

The Merced River's Cultural ORV 9 currently has no adverse impact or degradation, but localized concerns do exist. The *Final Merced River Plan/EIS* proposes several actions to enhance Cultural ORV 9 conditions in "Alternatives" (Chapter 8). To prevent future impacts, the NPS will monitor the condition of the ORV, and take specific actions should the ORV condition reach a specific trigger point.

Cultural ORV 10—Yosemite Valley Historic Resources

ORV 10—The Yosemite Valley Historic District represents a linked landscape of river-related or river-dependent, rare, unique or exemplary contributing resources that bear witness to the historical significance of the river system.
Location: Segment 2A (Yosemite Valley)
Rationale: Historic development within Yosemite Valley has been profoundly shaped by the Merced River and its associated natural systems. The National Register nomination for the Yosemite Valley Historic District identifies the river and its associated riverine corridor (including riparian zones and meadows) as the primary natural systems that have historically shaped the built environment of Yosemite Valley. The patterns of settlement, land use and manipulation of the environment have influenced the river system itself, its resources, and our perception of these resources. The ORV includes three National Historic Landmarks (the Ahwahnee Hotel, the Rangers' Club and the LeConte Memorial Lodge), as well as the Yosemite Valley Historic District (comprised of three historic developed areas [the Ahwahnee Hotel developed area, Camp Curry, and Yosemite Village), numerous sites, and broad-scale landscape characteristics). Because the historic district is one complete whole, the ORV includes those components that extend beyond the ¼-mile Merced wild and scenic river corridor.
Management Objective: The Yosemite Valley Historic Resources ORV would be managed to ensure the historic resources are in good physical condition. Actions that affect the integrity of historic resources are addressed through the NHPA regulations.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The landscape of Yosemite Valley is a continually evolving natural and cultural system that has changed in response to successive American Indian, private, state and federal government management strategies, increasing visitation, incremental loss of historic features, evolving land uses, and natural processes like floods, fires, and rockfalls. At the time of designation (1987), the Yosemite Valley Historic District was in essentially the same physical condition and largely served the same function as in the period of significance. The primary impacts to the District at the time of designation were incremental changes in the historic setting, such as evolution of the circulation system (e.g., converting the eastern part of the system to shuttle-only, adding bicycle paths, accessible walkways, parking, shuttle stops, etc.), and the addition of new buildings and structures. Some of the buildings within the District had been adapted for new uses, such as the former Fish Hatchery being rehabilitated for public use as a Nature Center. Changes in the natural systems and features are documented under other ORVs, largely consisting of conifer encroachment into meadows, scenic vistas, and black oak woodlands.

Current ORV Condition

Many of the changes to this ORV identified above continue to the present. It is important to recognize that change is inherent in the Yosemite Valley landscape, and that the Yosemite Valley Historic District cannot be managed as a museum piece. As with any cultural system, change is not only tolerated, but it is also embraced for the system to remain vibrant. Buildings and structures have been added as part of ongoing programs of visitor-use management and park administration in Yosemite Valley. Examples of these are the shuttle stop shelters constructed at The Ahwahnee and the LeConte Memorial Lodge National Historic Landmarks (NHLs). These structures were designed to complement the existing historic settings. Other elements of the historic district, most notably Residence 1 (the Superintendent's House) and the Yosemite Valley Chapel, were

affected by the 1997 winter flood. Use of the Superintendent's House was discontinued while the Chapel received preservation maintenance treatment to remediate the effects of inundation. The remaining buildings and structures of the Yosemite Valley Historic District receive regular inspection and preservation maintenance.

Management Indicator and Monitoring Program for ORV 10

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

Indicator – Condition of Historic Assets for ORV 10

Indicator Description

The physical condition of historic buildings, structures, and sites can indicate early warning signs of the overall condition of the Yosemite Valley Historic Resources ORV. An indication of the physical condition is available through the Facility Management Software System (FMSS), an established NPS program for managing agency fixed assets. NPS uses FMSS to inventory critical components of these assets; determine priorities for corrective maintenance; schedule routine maintenance; plan work, track progress, and evaluate success; and generate preventative maintenance plans.

This indicator is based on the FMSS program's quantification of the physical condition of the individual contributing historic buildings, structures, and sites included as fixed assets in FMSS. FMSS assigns a physical condition rating according to the following definitions:

- ***Good:*** The cost of deferred maintenance does not exceed 10% of the structure's current replacement value, and there are no significant problems with critical building systems.
- ***Fair:*** The cost of deferred maintenance is between 10% and 14% of the structure's current replacement value, and there are no significant problems with critical building systems.
- ***Poor:*** The cost of deferred maintenance is between 14% and 49% of the structure's current replacement value, or there are significant problems with critical building systems.
- ***Serious:*** The cost of deferred maintenance is 50% or more of the structure's current replacement value.

The FMSS database for Yosemite National Park does not currently have the capability to address broader landscape characteristics such as vegetation, natural systems and features, views and vistas, land use, circulation patterns, and spatial organization. Contributing historic vegetation and natural systems and features to the Yosemite Valley Historic District will be managed using the indicators and monitoring programs established by this plan for the Biological ORV 2. Contributing historic views and vistas are managed using indicators and monitoring programs for the Scenic ORV 16.

As noted above, the Yosemite Valley Historic Resources ORV is a dynamic landscape, influenced by decisions in the range of alternatives regarding user capacity and visitor use management, development and redevelopment, and/or removal, along with loss or damage due to natural events, or changes in physical condition due to neglect. Consequently, this indicator will measure the physical condition of the individual contributing historic buildings, structures, and sites that are extant and included as fixed assets in FMSS at the time of assessment.

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

To meet the management standard for this indicator, at least 2/3 (66.7%) of the extant contributing assets included in the 2006 Yosemite Valley Historic District nomination (as updated periodically) must be in "good" or "fair" condition, with no more than 10% of contributing assets in "serious" condition. At least 80% of the contributing resources of the three NHLs must also be in "good" or "fair" condition.[38]

Adverse Impact

An adverse impact would occur if 40%-60% of the extant assets are in "good" or "fair" condition; if more than 20% of the assets are in "serious" condition; or if more than 30% of the contributing resources of the three NHLs are in "poor" or "serious" condition.

Degradation

Degradation would occur if the Yosemite Valley Historic District or any of the NHLs lose their eligibility for listing in the National Register of Historic Places; if more than 50% of the assets are in "serious" condition; or if more than 50% of the contributing resources of the three NHLs are in "poor" or "serious" condition.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Condition of Historic Assets

The condition of contributing assets will be monitored through FMSS condition assessments every five years. This schedule would be adjusted to provide condition assessments for individual buildings and structures in response to unforeseen natural events (such as extreme flooding, fire, rockfall, etc.) that can affect the condition of a contributing resource. Given the dynamic nature of the ORV, NPS will update FMSS condition assessments to reflect any changes to contributing features to the Yosemite Valley Historic District according to the following conditions:

- Properties newly determined to be eligible as a contributing feature of the Yosemite Valley Historic District or to the three NHLs would become part of the Yosemite Valley Historic Resources ORV.
- If the National Register nomination for the Yosemite Valley Historic District is updated or amended and resources that were previously listed as contributing have been determined to have lost their integrity, those resources would be removed from the ORV.
- If a contributing asset is demolished, it will no longer contribute to or be a part of the Yosemite Valley Historic Resources ORV.

In all three instances, NHPA review would be critical to the process of updating National Register nominations, including management decisions to demolish contributing historic assets. Also, planning actions or decisions that have the potential to change historic developed areas or landscape characteristics will be guided by the Secretary of the Interior's Standards for Treatment of Historic Properties, and the Yosemite Design Guidelines.

[38] Currently, four of the ten contributing assets (Rangers' Club Garage/Woodshed, Ahwahnee Meadow, Ahwahnee Pond, and the Ahwahnee Walkways) are not included in FMSS. Until these can be added to FMSS, they will not be included in the inventory.

Management concerns would occur when the condition of an ORV has reached one of the trigger points identified in Table 5-29 below.

TABLE 5-29: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR YOSEMITE VALLEY HISTORIC RESOURCES (FMSS CONDITION ASSESSMENT)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Fewer than 80% of historic assets are in "good" or "fair" condition	1. Complete and update the FMSS condition assessment database 2. Increase the frequency of condition assessments for assets in "poor" or "serious" condition 3. Develop prioritized list of preservation actions based on severity of deterioration (addressing NHL assets first, and prominent public use assets second) 4. Preservation maintenance or repair to arrest ongoing deterioration and reverse damage	The rationale for taking action at this threshold is to ensure repairs are made to reverse damage or deterioration noticeable at the collective level, and prevent the condition of buildings or structures from deteriorating to a "poor" condition. These corrective actions should arrest key ongoing deterioration, and return assets to "good" or "fair" condition.
Trigger Point 2: Any contributing resource of the three NHLs is in "poor" or "serious" condition.		

Management to Protect and Enhance Yosemite Valley Historic Resources (ORV 10)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 10)

Table 5-30 compares the current condition of the Yosemite Valley Historic Resources to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-30: CURRENT CONDITION OF YOSEMITE VALLEY HISTORIC RESOURCES

Metric	Current Conditions
Meets management standard: At least 2/3 (66.7%) of the extant contributing assets included in the 2006 Yosemite Valley Historic District nomination must be in "good" or "fair" condition, with no more than 10% of contributing assets in "serious" condition. At least 80% of the contributing resources of the three NHLs must be in "good" or "fair" condition.	This ORV meets the management standard, but a management concern is present.
Management concern present: Fewer than 80% of historic assets are in "good" or "fair" condition, or if any of the contributing assets of the NHLs are in "poor" or "serious" condition.	Of a sample of 240 of the contributing historic assets in the Yosemite Valley Historic District, 72.9% are in "good" or "fair" condition, with 12.5% in "serious" condition. Also, the Ahwahnee Gatehouse, a contributor to the Ahwahnee Hotel NHL, is in "serious" condition.
Adverse impact: An adverse impact would occur if 40%-60% of the extant assets are in "good" or "fair" condition; if more than 20% of the assets are in "serious" condition; or more than 30% of the contributing resources of the three NHLs are in "poor" or "serious" condition.	None present at this time.
Degradation: Degradation would occur if the Yosemite Valley Historic District or any of the NHLs lose their eligibility for listing in the National Register of Historic Places; if more than 50% of the assets are in "serious" condition; or if more than 50% of the contributing resources of the three NHLs are in "poor" or "serious" condition.	

Preliminary analysis of a sample of 240 of the contributing historic assets in the Yosemite Valley Historic District (the sample includes a majority of the primary public use assets) indicates the following:

- 72.9% are in "good" or "fair" condition
- 12.5% are listed in "serious" condition
- The Ranger's Club Garage and Ahwahnee Hotel Parking Area (both contributing resources to NHLs) are in "fair" condition; and the Ahwahnee Gatehouse is in "serious" condition (other contributing resources to NHLs are in "good" condition)[39]

Updates to the database are ongoing and it is anticipated that a more comprehensive assessment can be completed using the database within five years.

Management Concerns and Protective Actions (ORV 10)

Because both triggers have been reached, it will be necessary to comprehensively address the FMSS condition assessment database with particular focus on assets currently listed in "poor" or "serious" condition. This process will yield a prioritized list of preservation actions, which will be developed in consideration of currently funded projects in progress throughout Yosemite Valley. Further preservation and/or rehabilitation actions will then be undertaken sufficient to eliminate the management concerns, with the contributing resources of the three NHLs being highest priority.

For example, when the Ahwahnee parking lot is redesigned, NPS will implement the recommendations from the Ahwahnee Historic Structures Report (1997) and the Ahwahnee Cultural Landscape Report (2010) to bring the Ahwahnee stone gate house and the Ahwahnee parking lot to "good" condition.

Localized Concerns and Enhancement Actions (ORV 10)

Localized concerns related to the Yosemite Valley Historic Resources ORV occur when 20% to 33% of the assets in the ORV are in "poor" or "serious" condition. This condition would still meet the management standard, but enhancement actions would still be possible. Enhancement actions for this ORV, therefore, would consist of continuing to improve asset conditions to the point that more than 80% of them are in "good" or "fair" condition.

Enhancement actions will be guided by the cultural resources section of the *2006 NPS Management Policies* and the Cultural Resource Management Handbook issued pursuant to Director's Order #28. Cultural resource management will be carried out in a manner that is consistent with legislative and regulatory provisions and with implementing policies and procedures. Planning will ensure full consideration of the park's cultural resources and values in all proposals for operations, development, and natural resource programs. Stewardship will continue to be subject to (1) preservation of existing states; (2) rehabilitation to serve contemporary uses, consistent with integrity and character; and (3) restoration to earlier appearances by the removal of later additions and replacement of missing elements.

[39] The Ahwahnee Hotel is currently listed in "poor" condition because proposed rehabilitation costs associated with the Ahwahnee Comprehensive Rehabilitation Plan have been entered into the FMSS database as "deferred maintenance." The rehabilitation plan will address more than the physical condition of the building, thus inflating the deferred maintenance costs. For this reason, the FMSS condition of this NHL is not accurate and is excluded from the analysis (the hotel is assumed to be in "fair" condition). Implementation of this rehabilitation program will be phased over 20 years. Every 5 years, FMSS condition assessments will account for the improved conditions (and reductions in deferred maintenance costs) resulting from this effort.

Conclusion: Protecting and Enhancing Cultural ORV 10 (Yosemite Valley Historic Resources)

The Yosemite Valley Historic Resources ORV does not currently have adverse impacts or degradation. However, management concerns are present in that fewer than 80% of the contributing resources are in good or fair condition, and the Ahwahnee Gatehouse is in "serious" condition. To address these concerns, the *Final Merced River Plan/EIS* would update the FMSS database, develop a prioritized list of actions (focusing in particular on assets in "poor" or "serious" condition), continue the active program of maintenance for historic buildings and structures; employ existing design guidelines to ensure that new development or redevelopment complements the ORV and the Yosemite Valley Historic District; and periodically assess and update professional documentation for the historic resources. The *Final Merced River Plan/EIS* also proposes additional actions to enhance Cultural ORV 10 conditions in "Alternatives" (Chapter 8).

Cultural ORV 11—El Portal Archeological District

ORV 11—The El Portal Archeological District contains dense concentrations of resources that represent thousands of years of occupation and evidence of continuous, far-reaching traffic and trade. This segment includes some of the oldest deposits in the region and the archeological remains of the Johnny Wilson Ranch, a regionally rare historic-era American Indian Homestead.
Location: Segment 4 (El Portal)
Rationale: El Portal's location midway between Yosemite Valley and the San Joaquin Valley made it an important place of settlement, subsistence, and trade along the Merced River. The steep, narrow canyon at El Portal includes river terraces with level lands on which villages were built. The presence of Great Basin and Pacific Coast artifacts indicates that El Portal was a location of continuous, far-reaching traffic and trade. The El Portal Archeological District encompasses an archeological landscape containing dense concentrations of resources representing some of the oldest deposits in the Sierra Nevada foothills, with data important to interpreting regional cultural history as old as 9,500 years. Particularly significant are the archeological remains of the Johnny Wilson Ranch, a rare example of an American Indian Homestead, which took advantage of the river as an irrigation source.
Management Objective: Archeological sites within the El Portal Archeological District would be monitored to ensure protection and enhancement of the district as a whole, and to ensure that human impacts are not adversely affecting the district's essential character.

Condition Assessment

ORV Condition at the Time of Designation (1987)

Prior to the river's designation, sites within the El Portal Archeological District were impacted from historic development and NPS administrative uses. Construction of the Yosemite Valley Railroad and Highway 140, logging, mining, concession operations, and park facility or residential construction had damaged 30% or more of the twenty-two sites listed in the district (NPS 1976). Four sites are known to have experienced particularly severe damage, most notably a large ancient village and cemetery where park infrastructure development had taken place. Sites have also experienced impacts from visitor use. Unauthorized collection of surface artifacts was presumed at several sites, although this type of impact is very difficult to document (NPS 1976).

Though these sites may have been damaged, they are nonetheless listed as contributing elements of the district, in part because these sites have been documented to contain dense and intact cultural deposits with information important to understanding regional pre-contact and historic-era American Indian lifeways.

Current ORV Condition

The condition of the El Portal Archeological District has not changed significantly from the time of designation (Darko 2011). Recent information suggests that one site in the district exhibits evidence of moderate visitor use impacts. Also, bioturbation (i.e., soil disturbance from biological sources such as animals) and impacts from the 1997 flood have impacted sites within the district.

Management Indicator and Monitoring Program for ORV 11

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. This ORV utilizes the same indicator to monitor the aggregate condition of the collection of archeological sites within the district as Cultural ORV 9 – Yosemite Valley Archeological District (Table 5-27). The management standards, definitions of adverse impact and degradation, monitoring program, and trigger points are the same as described under ORV 9.

Management to Protect and Enhance El Portal Archeological District (ORV 11)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 11)

Table 5-31 compares the current condition of the El Portal Archeological District to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-31: CURRENT CONDITION OF ARCHEOLOGICAL SITES IN EL PORTAL BASED ON MONITORING OF AGGREGATE CONDITION OF SITES

Metric	Percentage of Sites Free from Serious Human Impacts, 2007–11[a]		
	Location	High Data Potential Sites	Low Data Potential Sites
Meets management standard: *Sites with low data potential*: 80% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 85% of sites free from serious unmitigated human impacts.	Sample set of 6 sites (27%) of 22 sites relevant to the El Portal archeological value	100%	100%
Management concern present: *Sites with low data potential*: the number of individual sites free from serious unmitigated human impacts falls to 90% or less in a monitoring interval. *Sites with high data potential*: the number of individual sites free from serious unmitigated human impacts falls to 95% or less in a monitoring interval.	None present.		
Adverse impact: *Sites with low data potential*: 60% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 70% of sites free from serious unmitigated human impacts.			
Degradation: The archeological district is no longer eligible for listing in the National Register of Historic Places.			

NOTE:

[a] Impacts with partial loss irretrievable effects with moderate to severe damage levels or multiple (≥3) impacts with low damage levels.

The current condition of the district is drawn from the Archeology Visitor Use Program annual monitoring, which analyzed a representative sample of six sites (27%) from the district. Over a five-year period (2007-2011), 100% of high data potential sites and 100% of low data potential sites in the sample were considered free of serious human impacts, meeting the management standards for the indicator.

Management Concerns and Protective Actions (ORV 11)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-27. There are no management concerns associated with the El Portal Archeological District.

Localized Concerns and Enhancement Actions (ORV 11)

Localized concerns for this ORV include abandoned infrastructure located on CA-MRP-0181/H, which impacts the setting of a site with exceptionally significant scientific values and extremely sensitive cultural materials highly valued by traditionally associated American Indians. Also, informal trails, non-essential gravel roads, and visitor use contribute to archeological site disturbances at CA-MRP-0250/H and CA-MRP-0251/H in Old El Portal. To address these concerns, the NPS will undertake the following actions:

- In recognition of the high cultural significance of CA-MRP-181 for traditionally associated American Indians, the site will be protected from any further development. A plan of action for addressing the abandoned infrastructure on the site will be developed in consultation with traditionally associated American Indian tribes and groups. Any solution(s) developed will also include a recommended approach for deterring visitor use within the site.
- Remove informal trails, non-essential roads, and abandoned infrastructure to address the archeological site disturbances at CA-MRP-0250/H and CA-MRP-0251/H.

Conclusion: Protecting and Enhancing Cultural ORV 11 (El Portal Archeological District)

The Merced River's Cultural ORV 11 currently has no adverse impact, degradation or management concerns. However, the *Final Merced River Plan/EIS* proposes additional actions to enhance Cultural ORV 11 conditions in "Alternatives" (Chapter 8). To protect this ORV in the future, the NPS will monitor the condition of the ORV and take specific actions should the trigger point be reached.

Cultural ORV 12—Regionally Rare Archeological Features, including Rock Rings

ORV 12—This segment includes regionally rare archeological features representing indigenous settlement and use along the South Fork Merced River at archeological sites with rockring features.
Location: Segment 5 (South Fork Merced River above Wawona)
Rationale: Three regionally rare prehistoric archeological sites are located in this segment of the South Fork of the Merced Wild and Scenic River corridor. The sites contain unique stacked rock ring constructions and rock alignments. Two sites also contain pine timber remains within the ring interiors or incorporated into the stacked rock courses. Stacked rock ring structures are highly uncommon in the park (Hull and Moratto 1999) and their function is unknown. The rings may be associated with hunting activities at the nearby soda springs, a natural source of salt for animals (Knieriemen 1976).
Management Objective: The sites will be monitored to ensure that human impacts do not adversely affect their essential character and integrity.

Condition Assessment

ORV Condition at the Time of Designation (1987)

Rock constructions are fragile and highly subject to human alteration from camping and campfire building disturbances. Two of the South Fork sites are adjacent to formal NPS trails, increasing the likelihood of disturbance. Knierieman (1976) penned a short paper that described stacked rock rings with timbers within this river segment, their locations, associated artifacts, estimated temporal affiliations, and known impacts (1976). At the time, wilderness campers had reportedly destroyed at least one feature in a different area. Knierieman described the features as being in a "dilapidated condition" from natural processes.

Current ORV Condition

In 2000, an archeological assessment reported two of the sites in fair or good condition, with natural erosional processes and vegetation growth the only sources of impacts (Quinn 2001; Jackson and Hagen 2007). Damage assessments at similar rock ring sites near Johnson Lake in the southern portion of the park over two decades have noted rock ring features disassembled for use in fire rings, alignments cleared for sleeping or tent placement, and recent fire rings within features (Jackson 2005; Curtis 2011; Curtis and Darko 2012). The latter disturbance is particularly threatening for rare wood elements at the South Fork sites, opening the possibility of opportunistic use as campfire fuel before scientific analysis can be conducted. Human impacts noted, but not formally documented, at Wilderness Historic Resource Survey (WHRS) Structure 53 include campfire rings and garbage within the rock feature, structural alterations, and rock "furniture" constructed near the feature (Montague 2005).

Two of the sites, CA-MRP-2296 and CA-MRP-2363, were documented and monitored for site condition in 2010. A third site, WHRS Structure 53, has not been recorded to current Yosemite standards (Snyder 1992; Montague 2005). The vicinity of the sites has not been systematically surveyed, and it is possible that additional rock ring sites may be present along the South Fork. Should additional rock ring sites be discovered in the monitoring process, they would also become a part of the South Fork ORV.

Management Indicator and Monitoring Program for ORV 12

This section discusses the proposed management program for this ORV, including the indicators to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. The NPS would monitor the condition of this ORV in conjunction with the Wawona Archeological District (ORV 13). This ORV utilizes the same measures of site condition described under Cultural ORV 9 (Yosemite Valley Archeological District).

Indicator - Condition of Individual Rock Ring Sites for ORV 12

Indicator Description

The indicator is the condition of individual rock ring sites. Site condition includes the general physical state of the site and associated material remains; site stability, or potential for physical deterioration over time; and site integrity, the potential to convey information, setting, feeling, and association of previous historical eras to researchers, the public, and traditionally associated peoples.

Archeological site condition was chosen as an indicator because this characteristic is sensitive to human disturbance, an observable harmful effect on the integrity or data potential of a site resulting from human activity. There is a direct relationship between the degree of site disturbance and current site condition (NPS 2007a). Site disturbances, or impacts, can lead to the irretrievable loss of archeological resources at the individual site level (NPS 2007b). The cumulative loss of individual site resources within the ORV group can ultimately result in degradation of the ORV as a whole.

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The management standard for the sites would be met if three or fewer serious human impacts to the rock ring ORV site group occur in a five-year monitoring interval. This impact maximum may occur at a single site (one site receives three disturbances) or be spread over multiple sites (each site receives one disturbance). Serious unmitigated human impacts are single disturbances with partial or total loss irretrievable disturbance effects at moderate to high site damage levels, or a series of three or more disturbances with partial or total loss—irretrievable disturbance effects at low site damage levels. Unmitigated impacts are disturbances uncorrected by management action under regulatory context such as Section 106 of the National Historic Preservation Act.

In balancing visitor use and site preservation, some disturbances to resources can be acceptable if the site retains context and integrity (Fairley and Downum 2000). For sites with estimated high data potential, such as rock ring sites with unique attributes, the potential resource loss is greater, particularly given the small number of sites known to make up the ORV. A serious human impact or series of minor impacts resulting in irretrievable damage and loss at high data sites is less acceptable in such cases (Donnermeyer 2005), and the management standard (a maximum of three impacts in a monitoring interval) targets appropriate site protection levels based on professional judgment of condition assessments at similar sites within the southern portion of the park (Jackson 2005; Curtis 2011; Curtis and Darko 2012).

Adverse Impact

Adverse impact occurs when human disturbances to the rock ring ORV site group exceeds three serious human impacts in a five-year monitoring interval. This impact may occur at a single site (i.e., one site receives four disturbances) or be spread over multiple sites (i.e., each site receives one or more disturbances). The increase serves as a warning of long term downward trends in site condition, allowing for protective management actions before widespread site damages threaten the essential character of the ORV (Donnermeyer 2005).

Degradation

Degradation occurs when two or more sites comprising the ORV show severe disturbance severity levels and poor site conditions due to human impacts.

Severe disturbance levels indicate a prior history of disturbances causing major site damage. Sites or major portions of sites will likely be lost if actions to protect and/or preserve are not taken within two years. Poor site conditions result from multiple current disturbances causing loss of site features or key areas that define primary site function and are critical to site data potential for historical or scientific research. Such losses

make it difficult to utilize any remaining site data (NPS 2007). The combination of prior and current damage causes a near total loss of site significance and integrity. When the majority of sites (≥2) within this small collection of rare site types lose significance and integrity, the essential value of the ORV is lost.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Condition of Individual Rock Ring Sites

As required by the guidelines implementing WSRA, the NPS will conduct a program of monitoring and ongoing study during and following the implementation of the *Merced River Plan* to ensure that the Regionally Rare Archeological Features river value is protected throughout the life of the plan. Impacts on archeological resources are irreversible, and their condition can never be enhanced. Even if all human impacts could be eliminated, a downward trend in the condition of archeological resources over time would be inevitable due to the effects of natural weathering. Site condition assessments will be conducted for the rock ring sites at 5-10 year monitoring intervals, following the assigned ASMIS site inspection schedule. Given the sites' remote locations, a 10 year monitoring interval may be appropriate when site documentation is fully completed (NPS 2007b). This monitoring program allows for the type of feedback necessary for adaptive management (i.e., periodic, systematic analysis of collected site data, focused on management objectives) (Kintigh et al. 2007). At the same intervals, the compiled monitoring data would be compared to the trigger points in Table 5-32 below to determine whether protective actions are necessary. The 5-10 year interval for summary reporting and analysis is the minimum period necessary to accurately capture human impacts at a meaningful chronological scale (Bane 2011). Table 5-32 lists triggers and specific management responses that would take place should conditions reach the trigger points.

TABLE 5-32: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR REGIONALLY RARE ARCHEOLOGICAL FEATURES (INDIVIDUAL ROCK RING SITES)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: One (1) serious human impact to a rock ring site in a five-year monitoring interval.	Increased monitoring frequency at affected sites and other ORV sites within vicinity. This may include archeological monitoring and/or law enforcement/backcountry ranger monitoring.	Extreme component vulnerability and high research potential at rare rock ring sites require increased monitoring frequencies after single cases of serious disturbances.
Trigger Point 2: Two (2) serious human impacts to the rock ring ORV site group in a five year monitoring interval. This impact may occur at a single site (i.e. one site receives two disturbances) or spread over multiple sites (i.e. two sites receive one disturbance each).	Increased management protection designed to counteract or minimize impacts, crafted to individual site specifications or to site group. Actions include: • Site documentation, research, testing, or NRHP evaluation; • Dendrochronological analysis of rare wood elements; • Site stabilization, re-vegetation, trail reroutes, trail removal; • Increased outreach/education to permitted users such as backpackers; • Data recovery at affected sites; • Closure of areas to camping, utilizing law enforcement monitoring and increased visitor education about human impacts and the necessity for closures. Area closure regulations will be represented within the superintendent's compendium in order to allow legal enforcement.	Extreme component vulnerability and high research potential at rare rock ring sites requires timely management prescriptive actions before management standard levels are violated.

Management to Protect and Enhance Regionally Rare Archeological Features (ORV 12)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 12)

Table 5-33 compares the current condition of the regionally rare archeological features to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-33: CURRENT CONDITION OF REGIONALLY RARE ARCHEOLOGICAL FEATURES

Metric	Percentage of Sites Free from Serious Human Impacts, 2007–11[a]	
	Site	Condition
Meets management standard: Three or fewer serious human impacts to the site group occur in a five year monitoring interval. Impact may occur at a single site or be spread over multiple sites.		
Management concern present: One (trigger #1) or 2 (trigger #2) serious human impacts to a rock ring site in a five year monitoring interval.	A confirmed impact at site CA-MAD-2697 (WHRS Structure 53) trips the first trigger, requiring immediate management actions for site preservation, as shown in Table 5-32.	
Adverse impact: More than three serious human impacts to the site group occur in a five year monitoring interval. Impact may occur at a single site or be spread over multiple sites.	None present.	
Degradation: Two or more sites show severe disturbance severity levels and poor site conditions due to human impacts.		

NOTE:

[a] Impacts with partial loss irretrievable effects with moderate to severe damage levels or multiple (≥3) impacts with low damage levels.

Current site condition and impact numbers are drawn from Archeology Visitor Use yearly site monitoring (2007-2011), Wilderness Historic Resources Survey (WHRS) in 1992, 2005 project field reports, and 2012 Archeology Visitor Use reporting. Two recorded sites (CA-MAD-2296 and CA-MAD-2363) are currently in good condition with no reported human impacts and meet the management standard. The third site, CA-MAD-2697 (WHRS Structure 53), had one serious human impact noted in 2012 (NPS 2012).

Management Concerns and Protective Actions (ORV 12)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-32 above. One serious human impact at site CA-MAD-2697 (WHRS Structure 53) was confirmed during formal site documentation in the 2012 field season, meeting the first stage trigger identified in Table 5-32. Consequently, management concerns are present at that site, and NPS will increase monitoring frequency there. This may include archeological monitoring and/or law enforcement/backcountry ranger monitoring.

Localized Concerns and Enhancement Actions (ORV 12)

Localized concerns for this ORV include wilderness camping, which can disturb rock ring features when campers move rocks to create fire pits or use wooden material associated with archeological features for

firewood, and informal trails and visitor use, which can cause ground disturbing impacts to surface and sub-surface archeological resources. The NPS will implement the following actions:

- Complete documentation of features.
- Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).
- Remove informal trails and charcoal rings.
- Increase education and outreach to Wilderness travelers.

Conclusion: Protecting and Enhancing Cultural ORV 12 (Regionally Rare Archeological Features)

The Merced River's Cultural ORV 12 currently has no adverse impact or degradation, but management concerns do exist and protective action is required. To remedy these, the NPS will increase monitoring of rock ring sites, evaluate the need for scientific study through dendrochronological analysis, and remove informal trails in the vicinity of archeological sites. The *Final Merced River Plan/EIS* proposes additional actions to enhance Cultural ORV 12 conditions in "Alternatives" (Chapter 8). To prevent future impacts, the NPS would monitor the condition of the ORVs, and take specific actions when specific trigger points are reached.

Cultural ORV 13—Wawona Archeological District

ORV 13—The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. Segment 7 includes the remains of the U.S. Army Cavalry Camp A.E. Wood documenting the unique Yosemite legacy of the African American Buffalo Soldiers and the strategic placement of their camp near the Merced River.
Location: Segments 5 (South Fork Merced River above Wawona), 6 (Wawona Impoundment), 7 (Wawona), and 8 (South Fork Merced River below Wawona)
Rationale: Because there are few springs and no talus shelters in the Wawona area, sites of human activity reaching back thousands of years are concentrated along the river. The presence of Great Basin and Pacific Coast artifacts indicates that Wawona was a location of continuous far-reaching traffic and trade. Sites in this district contain important information relevant to research regarding permanent and semi-permanent settlement along a particularly long mid-elevation river. Physical remnants of the African American Buffalo Soldiers' late 19th and early 20th century federal protection of Yosemite National Park are present along the South Fork Merced River in Wawona. These reflect extremely rare African American army troop guardianship of national park lands. These are represented in the archeological remains of Camp A.E. Wood, the first Army headquarters in the park, which was situated near the South Fork and its year-round water source.
Management Objective: Archeological sites within the Wawona Archeological District would be monitored to ensure protection and enhancement of the district as a whole, and to ensure that human impacts are not adversely affecting the district's essential character.

Condition Assessment

ORV Condition at the Time of Designation (1987)

When the Wawona Archeological District was determined eligible for listing in the National Register of Historic Places in 1979, it had undergone very little in the way of archeological testing or excavation. The statements of significance on the National Register nomination form were based largely on surface assemblages and the potential for subsurface deposits, rather than explicit knowledge of the nature of such deposits. This potential was confirmed when Ervin (1984) carried out limited auger testing at 24 sites and performed test excavations at nine of the sites during the field seasons of 1983 and 1984 in anticipation of a water/wastewater infrastructure project. The results of this investigation proved that many sites within the Wawona Archeological District contained intact, and in some cases deeply buried, cultural deposits with the potential to reveal much about the pre-contact inhabitants of the area. As a result of this fieldwork, plans for the infrastructure development were modified to avoid or reduce impacts to known sites, which kept them in overall excellent condition. Although substantial historic-period development has occurred within portions of the Wawona Archeological District, Ervin (1984) concluded that impacts mainly affected surface artifact assemblages and only limited portions of subsurface deposits, leaving intact cultural materials with the potential to address important research questions related to the long history of human habitation and use of the Wawona area.

After the departure of U.S. Army troops from Camp A.E. Wood, the area was abandoned for several years until a public campground—known as "Camp Hoyle"— was established in the same location. In 1951, the campground was enlarged, improved, and renamed Camp A.E. Wood (Sargent 1961). The Wawona Campground grew around the site, with the portion known as Camp A.E. Wood eventually incorporated into the popular camping spot. Archeological survey work conducted for the National Register nomination of the Wawona Archeological District noted the presence of significant historic-era cultural materials but did not explicitly connect any of these remains to the early Army camp or to the African American soldiers assigned to park duty (NPS 1978). Further evaluation of several sites in the district during 1983-1984 fieldwork revealed a wealth of military and domestic artifacts related to Camp A.E. Wood, and possibly the early homestead of 1860s settler Stephan Cunningham, located within and adjacent to the current Wawona Campground (Ervin 1984). Square-cut nails, gun cartridges (a majority dating to 1899-1905), bullets, can fragments, bottle and window glass, and rotting wood were discovered in the top 6 centimeters of one of the test excavation units. During the 1983 field season, Ervin (1984) noted that disturbances to the historic-era component of the site were mainly a result of formal campground construction and maintenance, beginning with campsite and road grading, restroom construction, and other infrastructure development in the 1940s and continuing with the burial of modern campsite trash, casual collection of artifacts, and tent trenching practices. However, Ervin (1984) concluded that despite these impacts, the historic component of the site contained important information related to the U.S. Army's use of the area and possibly to early homesteading activities, as well.

Current ORV Condition

Of the 29 Wawona Archeological District sites visited during the 2007-2009 field seasons, 13 sites were estimated to have experienced severe impacts. Nine additional sites had a moderate degree of disturbance, and seven sites had a low rate of impact. Visitor use impacts were present at all but three of the monitored

sites (Middleton [NPS] 2008, 2009, 2010).[40] A recent condition assessment of the total 59 sites in the Wawona Archeological District within the Merced River Corridor found that 33% (19 sites) are in good condition, with an additional 38% (23 sites) in fair condition (Darko 2011). Eleven of the sites are in poor condition, while four could not be relocated during an attempted field visit, and two with unknown conditions were not visited as part of the project because they were outside the Merced River corridor. Darko's 2011 report corroborated the earlier estimations of disturbance severity levels, with 20 sites (35%) exhibiting a low level of disturbance, 17 (29%) having a moderate disturbance severity level, and 12 (19%) showing severe impacts. Ten (17%) of the sites within the 2011 Wawona Archeological District study area could not be assessed for disturbance severity levels.

Ongoing use and maintenance of the Wawona Campground continues to present potential impacts to the archeological remains of U.S. Army Cavalry Camp A.E. Wood. Extensive flooding in 1997 may also have contributed to impacts. Flood-related impacts to this site and others in the Wawona Archeological District were assessed in 1999 and 2004 (Montague and Valdez 2004). As of the most recent assessment, Camp A.E. Wood and the other examined sites in the district still possessed intact cultural deposits, but additional investigation of these sites was needed to more fully define their horizontal and vertical extent and integrity. Additional historical research was recommended to correlate the historic-era artifacts within the Wawona Campground to the occupation of the site by the U.S. Army Cavalry troops (Montague and Valdez 2004).

Impacts seen at archeological sites within this ORV segment fall into largely the same categories as those noted in the Yosemite Valley and El Portal archeological districts: administrative/facilities-related impacts such as campground and infrastructure maintenance, visitor use impacts (including general trampling, artifact collection, and creation of informal trails), and natural impacts such as flooding and erosion.

Management Indicator and Monitoring Program for ORV 13

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. This ORV utilizes the same indicator to monitor the aggregate condition of the collection of archeological sites within the district as Cultural ORV 9 – Yosemite Valley Archeological District. The management standards, definitions of adverse impact and degradation, monitoring program, and trigger points are the same as described under ORV 9 (Table 5-27). Portions of the Wawona Archeological District fall outside of the Merced Wild and Scenic River corridor boundaries, and other portions of the Wawona District are privately owned or in mixed public/private ownership areas. Sites located completely or mostly on private land would not be included in monitoring assessments due to lack of NPS jurisdiction. Monitoring at CA-MRP-168/329/H, the location of historic Camp A.E. Wood, would be regarded as a high priority, and conducted at the earliest possible opportunity in the site monitoring schedule.

[40] It is not known when the impacts occurred (i.e., before or after designation).

Management to Protect and Enhance Wawona Archeological District (ORV 13)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 13)

Table 5-34 compares the current condition of the Wawona Archeological District to the definitions of management standard, adverse impact, degradation, and management concern.

Human impact values for a sample of relevant Wawona Archeological District sites are drawn from Archeology Visitor Use yearly site monitoring for a sample set of 36 sites (42%) from 86 Wawona District sites relevant to the Merced River corridor ORV. Archeological sites outside of the river corridor judged not to be river-related (Wawona Meadow) and sites completely or mostly on private land are not included in the district site total. Over a five year interval (2007-2011), 92% of high data potential sites and 94% of low data potential sites in the sample were considered free of serious human impacts, meeting the management standard for this ORV.

TABLE 5-34: CURRENT CONDITION OF ARCHEOLOGICAL SITES IN WAWONA BASED ON MONITORING OF AGGREGATE CONDITIONS OF SITES

Metric	Percentage of Sites Free from Serious Human Impacts, 2007–11[a]		
	Location	High Data Potential Sites	Low Data Potential Sites
Meets management standard: *Sites with low data potential*: 80% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 85% of sites free from serious unmitigated human impacts.			
Management concern present: *Sites with low data potential*: the number of individual sites free from serious unmitigated human impacts falls to 90% or less in a monitoring interval. *Sites with high data potential*: the number of individual sites free from serious unmitigated human impacts falls to 95% or less in a monitoring interval.	Sample set of 36 sites (42%) of 86 sites relevant to the Wawona archeological value	92%	94%
Adverse impact: *Sites with low data potential*: 60% of sites free from serious unmitigated human impacts. *Sites with high data potential*: 70% of sites free from serious unmitigated human impacts.	None present.		
Degradation: The archeological district is no longer eligible for listing in the National Register of Historic Places.			

NOTE:

[a] Impacts with partial loss irretrievable effects with moderate to severe damage levels or multiple (≥3) impacts with low damage levels.

Management Concerns and Protective Actions (ORV 13)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-27 under ORV 9, above. Because the percentage of sites free of serious human impacts is below 95% for sites with high data potential, a management concern is present. To remedy this concern, one or more of the actions in Table 5-27 will be taken (increased monitoring frequency for affected sites; increased management protection designed to counteract or minimize impacts, crafted to individual site specifications; and/or NRHP nomination amendments to reflect changes in district integrity).

Localized Concerns and Enhancement Actions (ORV 13)

There are several localized concerns for this ORV:

- The Wawona Archeological District is subject to site-specific impacts from park operations, visitor use, artifact collection, vandalism, and ecological processes.
- Visitor use at Wawona Campground is potentially causing localized adverse impacts to site CA-MRP-168/329/H (Camp A.E. Wood), with ground disturbing activities potentially causing impacts to the shallow deposit of historic artifacts and features and modern campsites sometimes obscuring the historic setting of Camp A.E. Wood.
- Informal trails and variety of operational and visitor uses cause ground disturbing impacts to surface and sub-surface archeological resources at CA-MRP-0008/H.
- Shoulder and off-road parking is causing impacts to archeological resources on archeological site CA-MRP-0171/172/254/516/H.

The following actions would help to address these localized concerns:

- Increase monitoring frequency at affected sites.
- Remove seven campsites from Wawona Campground that cause potential impacts to the archeological site.
- Consider need for archeological site treatment measures to address impacts to shallow deposits of artifacts and features. Remove informal trails and develop site management guidelines.
- Remove informal trails and fire rings adjacent to shoulder and off-road parking in proximity to the site to prevent continuing disturbance.

Conclusion: Protecting and Enhancing Cultural ORV 13 (Wawona Archeological District)

The Merced River's Cultural ORV 13 currently has no adverse impact or degradation, but management concerns do exist and protective action is required. The *Final Merced River Plan/EIS* proposes additional actions to enhance Cultural ORV 13 conditions in "Alternatives" (Chapter 8). To prevent these problems from redeveloping, the NPS would monitor the condition of the ORV, and take specific actions should specific trigger points be reached.

Cultural ORV 14—Wawona Historic Resources

ORV 14—The Wawona Historic Resources ORV includes one of the few covered bridges in the region and the National Historic Landmark Wawona Hotel complex, which is one of the largest existing Victorian hotel complexes in a national park and one of the few remaining in the United States with this high level of integrity.

Location: Segment 7 (Wawona)

Rationale: Galen Clark, Yosemite's first guardian, built the original Wawona Covered Bridge in 1868, which became the bridge as it is today. The bridge embodies the distinctive characteristic of a unique type of construction and is the only historic covered bridge in the Pacific West region of the NPS. The nearby National Historic Landmark (NHL) Wawona Hotel is a complex of buildings and structures built between 1876 and 1918 adjacent to the South Fork Merced River. The complex, which includes seven buildings, is unique in its architectural unity, its formal placement on the rural landscape, the original building materials, and their form and massing. The hotel complex retains exemplary integrity of function given its use as a resort complex for over one hundred years. It is of national significance in architecture, is one of the largest existing Victorian hotel complexes within a national park, and is rare for its high level of integrity. It is also of national significance in art because it contains the studio of landscape painter Thomas Hill, who was one of the last painters of the Hudson River School and who painted here from 1886 to 1908.

Management Objective: The Wawona Historic Resources ORV would be managed to ensure the Wawona Covered Bridge and the Wawona Hotel and Thomas Hill Studio Historic District National Historic Landmark are in good physical condition. Actions that affect the integrity of historic resources are addressed through the NHPA regulations.

Condition Assessment

ORV Condition at the Time of Designation (1987)

At the time of the 1987 Wild and Scenic River designation, the Wawona Covered Bridge had recently undergone structural safety improvements. Well before river designation, the NPS had dismantled and restored the bridge in 1956 and 1957, employing hand-hewn timber construction in the same style as the original bridge. Some timbers were replaced in 1961 and again in 1983 when NPS corrected structural safety hazards following an inspection of the bridge (Greene 1987).

The Wawona Hotel Complex and Thomas Hill Studio (also known as the Pavilion), are nationally significant historic properties, listed in the National Register as the Wawona Hotel and Pavilion Historic District and designated the Wawona Hotel and Thomas Hill Studio National Historic Landmark district.[41] At the time of designation, the hotel complex was a national historic landmark, indicating that it met the very high standards of integrity necessary to qualify as an NHL. This was the case despite the fact that it had transferred from the private holdings of the Washburn Family to NPS ownership in the 1930s and had undergone recent rehabilitation to install a fire sprinkler system. According to a later (1998) condition assessment, the building exteriors "are generally highly intact and are composed of historic wood siding, with original door and window openings and trim. Roof cladding, while not original, is of the original type."[42] The NHL nomination notes that the buildings of the complex had "undergone certain changes in recent years to improve the quality of the seasonally-offered guest services and to make the structures safer for occupancy."[43] Given these general statements, it is clear that the Wawona Hotel and Thomas Hill Studio

[41] Laura Soulliere Harrison: Architecture in the Parks: A National Historic Landmark Theme Study. USDI National Park Service, U.S. Government Printing Office, Washington, D.C., 1986.

[42] Carey & Co. Inc., "Wawona Hotel Complex Condition Assessment, Yosemite National Park, California." Report on file, Yosemite National Park Resources Management and Science Library, 1988, p. ii.

[43] National Park Service: "National Register of Historic Places Inventory – Nomination Form for the Wawona Hotel and Thomas Hill Studio." USDI National Park Service, n.d.

had endured incremental change since their construction in the late 19th century, but survived largely intact and with an extremely high degree of integrity.

Current ORV Condition

Between 2002 and 2005, the Wawona Covered Bridge underwent a restoration effort to improve the deteriorating timber structure. Hand-hewn timbers were used to repair the structure in a manner similar to the original 19th-century construction. Restoration of the bridge also included:

- Constructing shoring to support the 115,000-pound timber frame of the bridge
- Removing the 8-inch sag from the superstructure, leveling the bridge
- Removing and replacing all seven of the deteriorated 14-square-inch by 30-foot transverse floor beams
- Repairing the bridge pier masonry in the riverbed
- Restoring the structural stability of the upstream and downstream timber frame truss assemblies
- Replacing the undersized timber components in order to resist wind and snow loading
- Replicating hand-hewed timbers using broad axes and traditional craftsmanship from 19th-century practices

All recent bridge restoration activities were designed to meet the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, thereby ensuring that the bridge retains its historical integrity. (The Secretary's standards were adopted in 1976, and earlier work was not designed to meet these specific standards.) Completion of the bridge restoration project inaugurated the creation of the interpretive Pioneer Yosemite History Center, with the restored bridge as a central feature.

A recent condition assessment of the Wawona Hotel Complex indicates that it continues to retain a high degree of historical integrity.[44] Individual buildings within the complex were assessed to be in good condition, with some minor deterioration of historic fabric. The NHL complex has undergone recent upgrades to address seismic stability and compliance with the Architectural Barriers Act Accessibility Standards of 2006. Additionally, a series of cyclic repair and maintenance projects were completed. The Thomas Hill Studio was recently rehabilitated and adapted for use as a visitor contact station. The fountains at the main hotel and the studio were also recently restored to their historic appearance and function. Each of these projects has been accomplished consistent with the *Standards for Treatment of Historic Properties,* thereby ensuring that the complex retains its historical integrity. Interior furnishings and finishes such as paint, wallpaper, carpeting, and some fixtures have been updated to maintain functionality and serviceability.

Management Indicator and Monitoring Program for ORV 14

This section discusses the proposed management program for this ORV, including the indicator to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

[44] National Park Service: "Wawona Hotel Complex Historic Structures Report." USDI National Park Service, Yosemite National Park, California, 2012.

Indicator – Condition of Historic Assets for ORV 14

This ORV will be monitored using the same indicator as ORV 10, Yosemite Valley Historic Resources: the condition assessment feature of FMSS. However, the definitions of management standard, adverse impact, degradation, and management concern vary from those for ORV 10, along with the triggers and management responses, reflecting the differences between the two historic districts. Not only does the Wawona ORV have far fewer structures, but all are in good or fair condition. Consequently, the management standard for this ORV is adjusted to preserve this existing condition. Just as with ORV 10, the Wawona Historic Resources ORV is a dynamic landscape, influenced by decisions in the range of alternatives regarding user capacity and visitor use management, development and redevelopment, and/or removal, along with loss or damage due to natural events, or changes in physical condition due to neglect. Similarly, this indicator will measure the physical condition of the individual contributing historic assets that are extant and included as fixed assets in FMSS at the time of assessment.

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

To meet the management standard for this indicator, both the Wawona Covered Bridge and all individual contributing resources to the NHL must be in "good" or "fair" condition.

Adverse Impact

An adverse impact would occur if the Wawona Covered Bridge or any individual contributing resource to the NHL fall to "poor" condition, or if any of the four cottages are lost.

Degradation

Degradation to this ORV would occur if the Wawona Covered Bridge or the Wawona Hotel and Thomas Hill Studio NHL lose their eligibility for listing in the National Register of Historic Places.

Monitoring Program to Prevent Future Adverse Impacts or Degradation

The monitoring schedule and techniques would be the same as under ORV 10. Trigger points and associated management responses are provided below in Table 5-35.

TABLE 5-35: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR WAWONA HISTORIC RESOURCES ORV (FMSS CONDITION ASSESSMENT)

Trigger Point at Which Management Action Would Be Taken	Required Management Actions (at least one action will be taken)	Rationale for Management Actions
Trigger Point: Any contributing resource to the ORV is in "poor" or "serious" condition.	1. Complete and update the FMSS condition assessment database 2. Increase the frequency of condition assessments for buildings and structures in "fair," "poor," or "serious" condition 3. Develop prioritized list of preservation actions based on severity of deterioration (addressing deterioration at NHL assets first) 4. Preservation maintenance or repair to arrest ongoing deterioration and reverse damage	The rationale for taking action at this threshold is to ensure repairs are made to reverse damage or deterioration noticeable at the collective level, and prevent the condition of buildings or structures from deteriorating to a "poor" condition. These corrective actions should arrest any ongoing deterioration, and return assets to "good" condition.

Management to Protect and Enhance Wawona Historic Resources (ORV 14)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 14)

Table 5-36 compares the current condition of Wawona Historic Resources to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-36: CURRENT CONDITION OF WAWONA HISTORIC RESOURCES

Metric	Current Conditions
Meets management standard: All individual contributing resources to the NHL and the Wawona Covered Bridge are in FMSS "good" or "fair" condition	The Wawona Covered Bridge is in FMSS "good" condition, but the database does not currently provide an accurate assessment of the condition of the contributing assets to the Wawona Hotel and Thomas Hill Studio. The database will be updated as soon as possible and a condition assessment will be done at that time.
Management concern present: Any contributing resource to the ORV is in FMSS "poor" or "serious" condition	
Adverse impact: An adverse impact occurs if any individual contributing resources to the NHL or the Wawona Covered Bridge fall to FMSS "poor" condition.	
Degradation: Degradation would occur if the Wawona Hotel and Thomas Hill Studio NHL or Wawona Covered Bridge cease to convey their significance as a historic property.	

Current FMSS condition assessments for the Wawona Covered Bridge list the resource in good condition. The FMSS database, however, has not been updated for concession-managed resources, so a condition assessment is not possible at this time for the Wawona Hotel and Thomas Hill Studio NHL. Consequently, the database will be updated within 5 years. However, as noted earlier, the *Wawona Hotel Complex Historic Structures Report* (2012) indicates that all contributing assets to the Wawona Hotel and Thomas Hill Studio NHL are in "good" condition, with the exception of Clark's Cottage, which is in "fair" condition ("good" and "fair," though, are not defined in this report the same way as they are in FMSS).

Management Concerns and Protective Actions (ORV 14)

Management concerns occur when the condition of an ORV has reached the trigger point identified in Table 5-35 above. Because FMSS has not been updated to include the Wawona Hotel and Thomas Hill Studio NHL, it is not possible to determine whether the Wawona Historic Resources ORV meets the

management standard. However, the recent *Wawona Hotel Complex Historic Structures Report* suggests that the hotel and contributing assets are in good condition, and FMSS indicates that the bridge is also in good condition, so it appears as though no management concern is present. This finding will be confirmed within 5 years, when FMSS is updated for this ORV.

Localized Concerns and Enhancement Actions (ORV 14)

Localized concerns related to the Wawona Historic Resources ORV occur when any of the assets in the ORV are in "fair" condition. Enhancement actions for this ORV, therefore, would consist of continuing to improve asset conditions to the point that all of them are in "good" condition. Because FMSS is not current regarding the condition of the Wawona Hotel and Thomas Hill Studio, it is not possible to determine whether localized concerns exist there. The bridge is in FMSS "good" condition, so no localized concern is present there.

Enhancement actions will be guided by the cultural resources section of the *2006 NPS Management Policies* and the Cultural Resource Management Handbook issued pursuant to Director's Order #28. For these enhancement actions, the cultural resources section of the *2006 NPS Management Policies* and the Cultural Resource Management Handbook issued pursuant to Director's Order #28 would continue to provide necessary guidance for protection of cultural resources throughout the park. Cultural resource management will be carried out in a manner that is consistent with legislative and regulatory provisions and with implementing policies and procedures. Planning will ensure full consideration of the park's cultural resources and values in all proposals for operations, development, and natural resource programs. Stewardship will continue to be subject to (1) preservation of existing states; (2) rehabilitation to serve contemporary uses, consistent with integrity and character; and (3) restoration to earlier appearances by the removal of later additions and replacement of missing elements.

Conclusion: Protecting and Enhancing Cultural ORV 14 (Wawona Historic Resources)

The Merced River's Cultural ORV 14 currently has no adverse impact, degradation, or management concerns. The *Final Merced River Plan/EIS* proposes additional actions to enhance Cultural ORV 14 conditions in "Alternatives" (Chapter 8). To prevent future impacts, the NPS will monitor the condition of the ORV, and take specific actions should conditions reach trigger points. Trigger points are selected to inform managers well in advance of adverse impacts or degradation impacts on the bridge and hotel complex.

SCENIC ORVs

This section describes the program to protect and enhance each Scenic ORV as proposed in the *Final Merced River Plan/EIS*. Four Scenic ORVs exist in the Merced River corridor, each related to a specific segment of the river (Table 5-37).

TABLE 5-37: SCENIC ORVS AND ASSOCIATED INDICATORS

ORV Number and Key Resource	Segment(s)	Indicator to be Monitored through Time
15. Scenic Views in Wilderness	1	No indicator is proposed, as Wilderness designation precludes development
16. Iconic Scenic Views in Yosemite Valley	2	Application of the Visual Resource Management System
17. Scenic Views in the Merced River Gorge	3	Application of the Visual Resource Management System
18. Scenic Wilderness Views along the South Fork Merced River	5	No indicator is proposed, as management as wilderness precludes development.

Scenic ORV 15—Scenic Views in Wilderness

ORV 15—Visitors to this Wilderness segment experience exemplary views of serene montane lakes, pristine meadows, slickrock cascades, and High Sierra peaks.

Location: Segment 1 (Merced River above Nevada Fall)

Rationale: Starting at the headwaters, the Merced River passes through chains of alpine and sub-alpine lakes, enters the subalpine and upper montane forest, and becomes walled in by a classic U-shaped glacial valley. Scenic landmarks visible from the river or its banks include Washburn and Merced Lakes, Echo Valley, Bunnell Point, and Little Yosemite Valley. The long river segment of great visual variety and its uncompromised natural setting provide diverse, exceptional scenery—all with the river in the foreground.

Management Objective: The NPS would maintain the visitors' ability to experience and appreciate the Scenic ORV by providing a wilderness river segment that is almost completely free of development.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The Merced river and its tributaries flow through glacially-carved landscapes with very few human-made features, largely unaffected by human activities. In 1984, this portion of the river corridor and adjacent lands were designated as Wilderness, with the exception of the Merced Lake High Sierra Camp, which is in a potential wilderness addition. The Merced Lake High Sierra Camp was established in the early twentieth century. A recreational trail, initially developed in the 1930s, followed the river corridor as far as the Lyell Fork, then continued up Red Peak Fork. The trail included wooden foot bridges at multiple locations. Backpackers campgrounds existed at Little Yosemite Valley, Moraine Dome, and Merced Lake. A historic ranger station existed, just off the trail, a short distance upstream from Merced Lake. The landscape was otherwise comprised of natural features such as granite rock formations, meadows and forests.

Current ORV Condition

Views from the river and trails along this segment are valued for their isolation from the developed world, their ecological integrity and Wilderness qualities. Trail conditions and opportunities for visitor access remain the same as in 1987. Scenic vistas can sometimes be obscured by regional air pollution, which is manifested in occasional haze during the summer months (NPS and Colorado State University 2002). Wild and prescribed fires sometimes limit the visual range from higher elevations and vistas or views located within the river corridor. Existing conditions include rustic structures, trails, footbridges, utility buildings and tents at the

historic Merced Lake High Sierra Camp, and primitive campsite development in Little Yosemite Valley. The level of development is largely the same as it was when the river was designated.

Management Indicator and Monitoring Program for ORV 15

Because Segment 1 is classified as a wild segment and the river corridor—aside from Merced Lake High Sierra Camp—is designated Wilderness, further development is strictly limited to structures or installations that are the minimum necessary to administer the wilderness. In addition, Congress designated the area containing the High Sierra Camp as potential wilderness and specified that the area must be managed as far as practicable as wilderness. . Additionally, the action alternatives will either remove the camp or replace its canvas tents with colors that harmonize better with the local environment, thereby reducing the camp's visual contrast with its surroundings. As a result of these restrictions, the scenic conditions present in this river segment will not experience material changes over time from development; the scenery will remain unchanged.

Management standard, adverse impact, and degradation are not defined for this ORV because further development is strictly limited under the Wilderness Act, the associated Minimum Requirements Analysis (MRA) process, and the legal restrictions on development at the High Sierra Camp. Furthermore, any new structures or renovations to existing structures would be subject to the contrast analysis discussed below under ORV 16 (with a maximum contrast rating of 4, with no strong contrasts present). Therefore, the NPS would not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*. The NPS will continue to participate in regional efforts to monitor air quality throughout the park. Because of the ambient nature of air quality, it cannot be managed exclusively for the river corridor.

Conclusion: Protecting and Enhancing Scenic ORV 15 (Scenic Views in Wilderness)

The Merced River's Scenic ORV 15 currently has no adverse impact, degradation, or management concerns. As a segment located almost entirely within protected Wilderness, except for the potential Wilderness addition at Merced Lake High Sierra Camp, the Scenic ORV for Segment 1 will remain undeveloped and will not be affected by human activity. The NPS will not monitor visual resources or conditions at site-specific scenic vista points.

Scenic ORV 16—Iconic Scenic Views in Yosemite Valley

ORV 16—Visitors to Yosemite Valley experience views of some of the world's most iconic scenery, with the river and meadows forming a placid foreground to towering cliffs and waterfalls.
Location: Segments 2A and 2B (Yosemite Valley)
Rationale: The Merced River enters Yosemite Valley at Nevada Fall, flowing through Emerald Pool and then over Vernal Fall. Once in the flat valley, the Merced provides the foreground to many of Yosemite's most famous landmarks. From within the Merced River corridor, views consist of Half Dome, Yosemite Falls, El Capitan, Bridalveil Fall, Three Brothers, Cathedral Rocks and Spires, Sentinel Rock, Glacier Point, North Dome, Washington Column, and Royal Arches and other unnamed parts of the cliffs and hanging valleys rimming Yosemite Valley. Meandering through a sequence of compound oxbows, wetlands, and meadows, the river and its related features provide broadened panoramas. Throughout Yosemite Valley, views from within the river corridor encompass the lower montane forest as it rises up to sheer rock faces of granite cliffs and talus slopes with a flat valley bottom serving as a contrasting foreground. The juxtaposition of granite domes and waterfalls is unique, as is the concentration of river-related views found in Yosemite Valley.
Management Objective: Segments 2A and 2B are the most highly accessible portion of the Merced River, visited by the greatest numbers of park visitors. Here the NPS provides the highest levels of service and accommodations for visitor use, and here the NPS has the greatest obligation to manage visual resources and visitors, and to protect and enhance the conditions that provide for the best possible viewing experiences. The NPS will ensure that all future development or redevelopment harmonizes with its surrounding landscape.

Condition Assessment

ORV Condition at the Time of Designation (1987)

Scenery was a key reason for setting Yosemite Valley aside as a national park (GMP EIS draft 1978; Olmsted 1865). Numerous roads, buildings, and other features were developed with scenic resources in mind (SVMP 2011; DuBarton 2007; Davis 2004; Carr 1998). In the late 1970s, the NPS conducted an assessment for the *1980 Yosemite General Management Plan* (GMP) to determine existing and historic viewing conditions and to identify the prominent landscape features in Yosemite Valley (NPS 1980). The GMP classified all areas of Yosemite Valley according to the following scale:

> **A –** Areas included in scenic views commonly chosen by eminent early photographers and painters or included in the most significant scenic views that exist today (this included all meadows and the entire length of the Merced River in the Valley);
>
> **B –** Areas included in scenic views less commonly chosen by historic photographers and painters or that compose less significant modern views based on park management observations;
>
> **C –** Areas of minor scenic quality and areas that can absorb visual intrusion without detracting from either primary or secondary views.

Based on this classification system, almost all of Yosemite Valley was either Class A or B. Only two small areas, one near the Upper Pines campground and another north of Yosemite Village, were considered Class C.

Multiple scenic resources and natural landmarks were visible from within the river corridor. The most prominent features noted were Half Dome, Yosemite Falls, El Capitan, Bridalveil Fall, Three Brothers, Cathedral Rocks and Spires, Sentinel Rock, Glacier Point, North Dome, Washington Column, and Royal Arches. Other important scenic resources that could be seen from within the Merced River corridor include Nevada, Illilouette, Vernal, and Ribbon falls; the cliffs at Yosemite Point and Lost Arrow Spire; and the scenic interface of river, rock, meadow, and forested valley floor.

Current ORV Condition

Views from within the river corridor, including from roadside locations, trails and vista points continue to retain high aesthetic value. The built and natural environments have changed subtly since the river was designated as a Wild and Scenic River in 1987. Some structures were damaged by flood or rock fall and removed over time. Meadow and riparian conditions are affected by visitor use as described in Biological ORV 2, and some scenic vista points are overgrown with vegetation and in need of maintenance. Views of scenery are commonly hampered by encroachment of conifers on meadows and in certain cases by exotic species.

The 1997 flood caused a general reduction in the development footprint within the river corridor and floodplain. Curbing was later installed along Northside and Southside Drives to protect sensitive resource areas, and the Lower Yosemite Fall project removed idling buses from a primary viewing area of the falls.

The NPS has protected and restored meadows by removing obsolete or abandoned utility lines, removing non-native vegetation and encroaching conifers, planting and reestablishing native vegetation, constructing meadow boardwalks, and implementing monitoring programs. Due to these actions, direct views of meadows themselves and of meadows in the foreground views towards iconic scenic views have improved. However, river bank erosion and vegetation trampling associated with visitor access to river points continues to detract from visitor use and enjoyment of iconic scenic views in Yosemite Valley.

The 2004 *Scenic Vista Management Plan for Yosemite National Park Environmental Assessment* (SVMP) (NPS 2010a) defined numerous, key scenic vista points throughout Yosemite.[45] The SVMP went on to rate and rank the quality of the scenic vista points, providing quantified values of the scenic merits of each viewpoint and ranking them as high-, medium-, or low importance based on that value. Finally, the SVMP provided specific proposals for the management of vegetation changes that have intruded on scenic vista points and defined limits on management actions based on ecological conditions (NPS 2009a, 2009b). The SVMP deferred final decisions on maintenance of vista points in the Merced River corridor to this plan. Appendix H lists the viewpoints in the Merced River corridor that this plan will indeed maintain along with the rationale for elimination of others and a description of the vegetation management actions for each vista point.

Management Indicator and Monitoring Program for ORV 16

This section discusses the proposed management program for this ORV, including the indicators to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program.

Indicator – Contrast Analysis for ORV 16

Indicator Description

To protect and enhance this ORV, the NPS will apply the Visual Resource Management (VRM) system developed by the Bureau of Land Management (BLM 2007) to monitor this ORV. The VRM system has been

[45] The park's *General Management Plan* used historic photographs and landscape paintings to identify the best locations for viewing scenery (NPS 1980).

used for over three decades and has proven to be a process that can articulate and document conditions that viewers consider inappropriate to the natural environment (Galliano 2000).[46]

There are typically three steps for the VRM system: an inventory of the existing landscape, assignment of management classes, and a contrast analysis. The inventory is done to ensure that existing conditions are acceptable based on scenic quality, the sensitivity of viewers to potential changes in the landscape, and the distance from which the landscape is viewed. The inventory also develops a baseline for future comparison. Management classes are then assigned in consideration of all resource values; these determine the acceptable level of visual change for each area. Landscapes are classified into one of four classes, with class I being most protective/most wild and class IV being most accommodating to a variety of human change. A final category (V) is sometimes used to describe a landscape that is altered to the extent that it cannot be classified or managed for natural scenic qualities. Finally, in the contrast analysis, the degree of contrast of a management action, as compared to the native landscape and within management objectives, is quantitatively assessed.

Within the context of the Merced Wild and Scenic River, the VRM landscape classification is determined by the river segment designation of Wild, Scenic or Recreational. As presented in Table 5-38, there is a natural parallel between wild and scenic river classifications and VRM classes.

TABLE 5-38: PARALLELS BETWEEN WSRA CLASSIFICATIONS AND VRM CLASSES

Wild and Scenic Rivers Act (WSRA)	BLM Visual Resource Management (VRM) System Classifications (BLM 2007)
Wild: Free of impoundments, generally inaccessible except by trail with watersheds or shorelines essentially primitive and waters unpolluted; vestiges of primitive America	**Class I Objective** – Preserves existing character of the landscape and provides for natural ecological changes, but does not preclude limited management activity. Any changes in the landscape should be minimal and must not attract attention.
Scenic: Free of impoundments with shorelines or watersheds still largely primitive and shorelines undeveloped, but accessible in places by roads	**Class II Objective** – Retains existing character of the landscape. Any changes in the landscape should be minimized. Management activities may be seen, but should not attract attention. Any changes must repeat or maintain basic elements of form, line, color and texture found in predominant natural features and characteristics of the broader landscape.
Recreational: Readily accessible by road or railroad, may have some development along shorelines, and may have undergone impoundment or diversion in the past	**Class III Objective** – Partially retains existing character of the landscape. Any changes to the landscape should result in moderate differences. Management activities may be noticeable but should not dominate views. Any changes should repeat the basic elements found in the predominant natural features of the landscape.
Areas not designated	**Class IV Objective** – Provides for management activities that result in major modifications of the existing landscape. Changes in the landscape may be significant. Management activities or actions may dominate views or become a focus of viewer attention. Every attempt should be made to minimize the impact of activities or actions through careful location, minimal disturbance, and repetition of basic elements.
Areas not eligible for designation	**Class V** – Development or other landform changes predominate; the natural landscape is compromised to the extent that it can no longer be managed for natural scenic qualities.

As indicated above, these classifications determine management goals for the protection of scenic areas. The VRM analysis proposed for this indicator also considers naturally-occurring landscape changes (such as fire or rock fall) and cumulative management actions over time.

[46] The Forest Service also developed a Visual Management System (VMS) (USDA 1995), but the BLM VRM system is better suited to adaptation to use as a scenic management indicator.

In 2013, park staff performed a pilot base inventory in both Segments 2A and 2B, inventorying the view from the high-and medium-importance scenic vista points. In addition, random points along the river were generated and inventoried to ensure a good geographic representation of the entire river segments. The inventory is done to ensure that existing conditions are acceptable based on scenic quality, the sensitivity of viewers to potential changes in the landscape, and the distance from which the landscape is viewed. At each point, staff both inventoried the existing view and assessed the view for potential contrasts between the human developments that were present (if any) and the natural landscape (as described above). The NPS found that the level of development and contrast in Segment 2A is appropriate to VRM Class III, and 2B is appropriate to Class II.

To protect the ORV from being adversely impacted or degraded by new developments or redevelopments in the future, the NPS will perform a contrast analysis before the design process concludes to ensure compatibility with the surrounding landscape. The contrast analysis is intended to reveal effects on the outstandingly remarkably scenic value before a new structure is built (or an existing one is remodeled). A contrast analysis is a way to quantitatively assess the degree to which a proposed structure will harmonize or detract from the native landscape. "Contrast" refers to the difference between the key components of a landscape (form, line, texture, and color, of both the landscape's vegetation and also its land and water) and the same components of the proposed structure. For each of the 12 key components (

Figure 5-5), contrast will be rated from strong (3 points) to none (0 points). This could result in a contrast rating as high as 36, if the structure is rated as having a strong contrast in all categories. Higher scores indicate a higher level of potential contrast between the proposed development and the surrounding landscape, with lower scores indicating that a proposed development would blend harmoniously with (or not distract from) its surrounding landscape.[47] For proposed structures, the contrast analysis will be performed using photographs from the key vista points identified in the 2004 SVMP and the random monitoring points along the river.

Figure 5-5: Sample Contrast Analysis Rating Sheet (The 12 empty cells would all be completed, providing a comprehensive and quantitative analysis of the proposed structure's contrast with the existing landscape.)

		FEATURES		
		Land and Water Body	**Vegetation**	**Other Structures**
		Strong (3 pt.) Moderate (2 pt.) Weak (1 pt.) None (0 pt.)	Strong (3 pt.) Moderate (2 pt.) Weak (1 pt.) None (0 pt.)	Strong (3 pt.) Moderate (2 pt.) Weak (1 pt.) None (0 pt.)
ELEMENTS	**Form**			
	Line			
	Color			
	Texture			

[47] While scores have some subjectivity, variations in scoring between scorers decline with user training and experience (NPS 2009). For example, the NPS in the Blue Ridge Parkway has used this system using large numbers of volunteers to assess scenic value and monitor change over time. Using those results, park managers have been able to successfully communicate the need of adjacent land owners to modify developments to reduce the possible contrasts with the native landscape. Results were also introduced in a 2008 lawsuit case against Tennessee Valley Authority and cited by the judge in the ruling to justify requirements for three coal plants to operate above Clean Air Act standards (NPS 2009).

To minimize potential contrasts, new development or re-development in Yosemite Valley would be designed to be compatible with historic districts and preservation of rustic architecture, using "A Sense of Place: Design Guidelines for Yosemite Valley." These design guidelines are intended to promote harmony between the built and natural environments. Furthermore, all new structures or remodels in the recreational segment must be designed so that no more than two strong contrasts are present, with no strong contrasts in the scenic segment. Similarly, remodels of existing structures should not exceed the contrast ratings of the structure before remodel; preferably, any contrasts will be reduced.

Definitions of Management Standards, Adverse Impact, and Degradation

Management Standard

The management standard is defined according to river segment classification and associated acceptable contrast ratings. Scenic segments (such as 2B, discussed below) shall meet VRM Class II definitions and the recreational segment (2A) shall meet VRM Class III definitions. Additionally, the average contrast rating of all scenic points in the segment (as determined in the initial inventory, which rates the scenic character and contrast from the scenic vista points and other representative viewpoints) should be 12 or less for scenic segments and 21 or less for the recreational segment, with no strong contrasts in scenic segments and no more than two strong contrasts per structure in the recreational segment, to the extent practicable by law.[48]

Adverse Impact

Scenic river segments managed as VRM Class II would be adversely impacted if human constructions or actions resulted in the segment falling into the VRM class III management class. The recreational river segment managed as VRM Class III would be adversely impacted if human constructions or actions resulted in the segment falling into VRM Class IV management class.

Degradation

Scenic river segments would be degraded if human constructions or actions resulted in the segment falling into VRM class IV management class. The recreational river segment would be degraded if human constructions or actions resulted in the segment falling into VRM class V management class.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – Contrast Analysis

Monitoring for this ORV will only take place when planned construction of any new structure or exterior modifications to any existing structures occur. Table 5-39 describes the triggers and required management actions to protect Scenic ORV 16 should the contrast analysis reveal that a proposed structure, or a modification of an existing structure, would unacceptably contrast with its surrounding landscape, or if the initial inventory reveals an undesirable level of contrast between existing structures and the surrounding landscape.

[48] In some cases, high contrast ratings are due to structural elements required by law and not possible for NPS to mitigate, such as pavement markings, highway signs, etc. In this case, NPS will reduce the contrasts to the extent practicable.

TABLE 5-39: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR ICONIC SCENIC VIEWS IN YOSEMITE VALLEY (VISUAL RESOURCES MANAGEMENT)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: Planned construction of any new structure or exterior modifications to any existing structure	For new structures: 1) perform contrast rating, AND 2) design structure to: a) preserve or improve the segment contrast average, b) produce no strong contrast ratings in scenic segments or more than two strong contrast ratings in recreational segments, AND c) keep the overall contrast rating below 10 for scenic segments and 18 for recreational segments For redesigned structures, the contrast rating of the new structure should not exceed that of the old.	The contrast analysis is intended to reveal effects on the outstandingly remarkably scenic value before a new structure is built. New or remodeled structures within this segment should attempt to minimize the contrast to the surrounding landscape to the best extent possible.
Trigger Point 2: A segmentwide average contrast rating of 10 or above for scenic segments and 18 or above for the recreational segment	Comprehensive assessment of all contrast ratings and adoption of suggested mitigations therein sufficient to drop the segmentwide average below 10 or 18 (note that some contrasts, such as highway markings, are outside of the management of NPS; in such cases, NPS will eliminate contrasts to the extent practicable).	Segmentwide average contrast ratings of 10 or higher for scenic segments and 18 or higher in the recreational segment mean that the contrasts are jeopardizing the Class rating for these segments.

Management to Protect and Enhance Iconic Scenic Views in Yosemite Valley (ORV 16)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 16)

Table 5-40 compares the current condition of the Iconic Scenic Views in Yosemite Valley to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-40: CURRENT CONDITION OF SCENIC VALUES IN YOSEMITE VALLEY BASED ON VISUAL RESOURCE MANAGEMENT SYSTEM

Metric	Compliance with VRM Class Objectives, 2010
Meets management standard: Scenic segments shall meet VRM Class II definitions and the recreational segment shall meet VRM Class III definitions. Additionally, the average contrast rating of all scenic points in the segment should be 12 or less for scenic segments and 21 or less for the recreational segment, with no strong contrasts in the scenic segment and no more than two strong contrasts per structure in the recreational segment, to the extent practicable by law.	Segment 2A meets the VRM Class III definitions and has an average contrast rating of 12.4.
Management concerns present: Planned construction of any new structure or exterior modifications to any existing structure (trigger 1) or a segmentwide average contrast rating of 10 or above for scenic segments and 18 or above for the recreational segment (trigger 2).	Segment 2B meets the VRM Class II definitions but has an average contrast rating of 12.4.
Adverse impact: A change in VRM class from II to III (scenic segment) or III to IV (recreational segment)	None present.
Degradation: A change in VRM class from II to IV (scenic segment) or III to V (recreational segment)	

Preliminary analysis of the results from the 2013 pilot inventory indicates that the viewpoints in Segment 2A had an average scenic value of 17.7 (note that this is not the same score as the contrast analysis; for the

scenic inventory, the higher the score, the more impressive the view) with an average contrast rating of 12.4 (for this rating, the higher the score, the more contrast is evident between human developments and the native landscape). Segment 2B had an average scenic value of 16.8 with an average contrast rating of 12.4.

Management Concerns and Protective Actions (ORV 16)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-12. The average contrast ratings of 12.4 for the two Yosemite Valley segments from the 2013 pilot effort is within the range of the management standard for the recreational segment (2A), but not for scenic segments (2B), largely due to the contrasts evident in some parking lots. Consequently, a management concern is present in Segment 2B.

To remedy this concern, NPS will comprehensively assess the contrast rating sheets for this segment and adopt suggested mitigations therein sufficient to drop the segmentwide average below 10. Actions proposed to redesign and formalize parking lots will mitigate many of the contrasts. However, as noted above, some contrasts, such as highway markings, are outside of the management of NPS; in such cases, NPS will eliminate contrasts to the extent practicable.

As called for in the various action alternatives, new structures may be built or existing ones repurposed and/or remodeled. Such projects would all be subject to a contrast analysis, with the structures designed to keep the segment contrast average or below its existing value, with no strong contrasts present in structures proposed for the recreational segment and no moderate or strong contrasts present in structures proposed in the scenic segment, and no total contrast ratings over 18 for structures proposed for the recreational segment and no total contrast ratings over 10 for structures proposed in the scenic segment.

Localized Concerns and Enhancement Actions (ORV 16)

Localized concerns pertaining to this ORV include vegetation growth that has intruded on scenic viewpoints historically available to park visitors, and riverbank erosion and informal trails that affect the foreground to some scenic views in the Merced River corridor.

NPS will take the following actions to enhance this ORV:

- The NPS will adopt the maintenance program for the scenic vista points outlined in Appendix H. Because vegetation growth can obscure these iconic views, the NPS will regularly (every five years) clear vegetation that is crowding or obscuring the scenic vistas. Appendix H provides specifics on how the vegetation is to be cleared at each of the 46 viewpoints.
- Upon full analysis of the 2013 inventory and contrast analysis of existing structures, the NPS will mitigate, to the extent feasible, high contrasts found at existing sites in the recreational segment and both moderate and high contrasts found at existing sites in the scenic segment.
- All alternatives propose a 150-foot riparian buffer, which would generally insulate the river from development and protect views from its bed and banks. Restoration efforts common to Alternatives 2-6 and the 100-foot riparian buffer would provide for the protection and enjoyment of scenery that is river related or river dependent.
- New development or re-development in Yosemite Valley would be designed to be compatible with historic districts and preservation of rustic architecture, using "*A Sense of Place: Design Guidelines for Yosemite Valley*." These design guidelines are intended to promote harmony between the built and natural environments.

Conclusion: Protecting and Enhancing Scenic ORV 16 (Iconic Scenic Views in Yosemite Valley)

The Merced River's Scenic ORV 16 currently has no adverse impact or degradation. However, a management concern is present in Segment 2B, which has a higher average contrast rating than is desired. To address this concern, the *Final Merced River Plan/EIS* will mitigate the contrasts revealed in the 2013 inventory of scenic vistas in that segment, to the extent feasible by law. Additionally, the action alternatives propose restoration of denuded riverbanks and trampled meadows, and maintenance of high-priority scenic vista points. The *Final Merced River Plan/EIS* proposes additional actions to enhance Scenic ORV 16 conditions in "Alternatives" (Chapter 8). To prevent future management concerns, the NPS will monitor the condition of the Scenic ORV 16, maintaining high-priority scenic vista points, performing contrast analyses on all new proposed structures, and taking action to keep those proposed structures appropriate to the Yosemite Valley landscape.

Scenic ORV 17—Scenic Views in the Merced River Gorge

ORV 17—The Merced River drops 2,000 feet over 14 miles, it is a continuous cascade under spectacular Sierra granite outcrops and domes.
Location: Segment 3 (Merced River Gorge)
Rationale: Descending from Yosemite Valley, the river becomes a continuous cascade in a narrow gorge littered with massive boulders. Arch and Elephant Rocks and other landmarks rise above, all visible from the river or its banks. Dropping 2,000 feet in 14 miles, canyon walls rise steeply from the river and have many seasonal waterfalls cascading down to the river. Spring and fall bring special parades of colors, from redbuds and other plants flowering in spring to bigleaf maples and other trees turning bright colors in fall.
Management Objective: Segment 3 is classified as a scenic reach of the river, fully accessible by El Portal Road, and will be managed to promote visitor enjoyment from the river, from roadside pullouts, and from the roadway itself. Any further development is precluded.

Condition Assessment

ORV Condition at the Time of Designation (1987)

El Portal Road was originally built on the edge of the Merced River as a connecting route between Yosemite Valley and the Yosemite Valley railroad terminal in El Portal. Pullouts allowed for short and long-range views of the river and nearby rock formations. The river and Cascades Fall were visible from passing vehicles using El Portal Road or Big Oak Flat Road. Some structures intruded upon views from within the Merced River corridor in the Gorge, such as the Arch Rock entrance station, Cascades Dam powerhouse, Cascades housing units, and Cascades Diversion Dam.

In 1987, the Cascade Diversion Dam and associated features, including the powerhouse building, were visible from the river and its bank. The dam spanned the entire river, with an intake structure on the right bank of the river, and the associated powerhouse was a short distance downstream. The dam was no longer in use, in a dilapidated state. The powerhouse building was still present, but no longer used to generate power, instead being used as a high voltage substation. Portions of the El Portal Road were visible from the river and its banks, particularly in the Cascades and Arch Rock areas, where the river gradient is less severe and the road is close to the river.

Current ORV Condition

El Portal Road and the underlying sewer main were severely damaged by the 1997 flood. Both were rebuilt soon thereafter, with road conditions updated according to contemporary safety standards. Rock walls and barriers were rebuilt in keeping with the historic character that existed before the flood and new walls were built in keeping with the historic character. Cascades picnic area was developed and river resources were subsequently restored. The dam was removed in 2004, with the historic powerhouse, Arch Rock entrance station, and comfort station remaining in place today. The visual or scenic resources in the Merced River Gorge are largely unchanged from those present at the time of Wild and Scenic River designation.

The scenic quality in the area of the river at the Big Oak Flat Road-El Portal Road junction has significantly improved, because NPS removed the Cascades Diversion Dam and associated features in 2004 and restored the river to free-flowing conditions. The scenic quality in the vicinity of the dam returned to a natural condition within six years. The powerhouse remains and continues to be used as a high voltage substation.

Management Indicator and Monitoring Program for ORV 17

This section discusses the proposed management program for this ORV, including the indicators to be used; the definitions of management standard, adverse impact, and degradation; and the monitoring program. This ORV utilizes the same indicator to monitor the scenic views in the Merced River Gorge as the indicator described under Scenic ORV 16 – Iconic Scenic Views in Yosemite Valley. The management standards, definitions of adverse impact and degradation, monitoring program, and trigger points are the same as described under ORV 16 (Table 5-39).

Management to Protect and Enhance Scenic Views in Merced River Gorge (ORV 17)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 17)

Table 5-41 compares the current condition of the Iconic Scenic Views in Merced River Gorge to the definitions of management standard, adverse impact, degradation, and management concern.

TABLE 5-41: CURRENT CONDITION OF SCENIC VALUES IN MERCED RIVER GORGE BASED ON VISUAL RESOURCE MANAGEMENT SYSTEM

Metric	Compliance with VRM Class Objectives, 2013
Meets management standard: Scenic segments shall meet VRM Class II definitions and the recreational segment shall meet VRM Class III definitions. Additionally, the average contrast rating of all scenic points in the segment should be 12 or less for scenic segments and 21 or less for the recreational segment, with no strong contrasts in the scenic segment and no more than two strong contrasts per structure, to the extent practicable by law.	
Management concerns present: Planned construction of any new structure or exterior modifications to any existing structure (trigger 1) or a segmentwide average contrast rating of 10 or above for scenic segments and 18 or above for the recreational segment (trigger 2).	Segment 3 meets the VRM Class II definitions but has an average contrast rating of 14.3.
Adverse impact: A change in VRM class from II to III (scenic segment) or III to IV (recreational segment)	None present.
Degradation: A change in VRM class from II to IV (scenic segment) or III to V (recreational segment)	

In 2013, park staff performed a base inventory of the view from the only scenic vista point in this segment as well as randomly generated points along the river (to ensure a good geographic representation of the entire river segment). At each point, staff both inventoried the existing view and assessed the view for potential contrasts between the human developments that were present (if any) and the natural landscape (as described above). Preliminary analysis of the results indicates that the viewpoints in this segment had an average scenic value of 13.6 (again, this is not the same score as the contrast analysis; for the scenic inventory, the higher the score, the more impressive the view) with an average contrast rating of 14.3, largely due to contrasts stemming from the linearity of the road and its pavement markings.

Management Concerns and Protective Actions (ORV 17)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-39. There is a management concern present related to scenic values in the Merced River Gorge, Segment 3: the average contrast rating exceeds 10. For this reason, NPS will undertake the same assessment of the contrast rating sheets for this segment and adopt suggested mitigations therein sufficient to drop the segmentwide average below 10. However, as noted above, some contrasts, such as highway markings, are not possible to eliminate; in such cases, NPS will eliminate contrasts to the extent practicable.

No new development or landscape changes are proposed within the river corridor aside from minor improvements to existing roadside pullouts. The only changes in landscape, except for minor trail reroutes and life-safety upgrades, will occur as natural processes prevail over present conditions.

Localized Concerns and Enhancement Actions (ORV 17)

In addition to the contrast analysis, the NPS will adopt a maintenance program for the scenic vista point in this segment as outlined in Appendix H. Because vegetation growth can obscure this iconic view, the NPS will regularly (every five years) clear vegetation that is crowding or obscuring it, as outlined in Appendix H. Another enhancement action would be to remove overhead power lines from the Cascades Powerhouse to the Wawona Tunnel.

Conclusion: Protecting and Enhancing Scenic ORV 17 (Scenic Views in Merced River Gorge)

The Merced River's Scenic ORV 17 currently has no adverse impact or degradation, but a management concern is present. To address that concern, the *Final Merced River Plan/EIS* will mitigate the contrasts revealed in the 2013 inventory of scenic vistas, to the extent feasible by law. To prevent future management concerns, the NPS will maintain the scenic vista point in this segment. Segment 3, however, is unlikely to be affected by human activity in the future, due to the deep topography and rugged terrain of the Merced River Gorge and because no new facilities or visitor services are proposed.

Scenic ORV 18—Scenic Wilderness Views along the South Fork Merced River

ORV 18—The South Fork Merced River passes through a vast area of natural scenic beauty.
Location: Segments 5 and 8 (South Fork Merced River, both above and below Wawona)
Rationale: The South Fork Merced River in these stretches is largely inaccessible, with just a few trail crossings above Wawona and none below it. The scenery from the river or its banks is that of an undeveloped Sierra Nevada river valley, with views dominated by forest-cloaked hills, distant peaks, and an untamed river. These are some of the wildest views in the Sierra Nevada. The landscape spanning wild Segments 5 and 8 includes distant, dramatic vistas of mountains and waterfalls and close, beautiful views of forests and gorges. Both segments are accessible only by foot, or by mule or on horseback.
Management Objective: The NPS will maintain primitive conditions in Wilderness areas adjacent to the river, within the river corridor and beyond. The NPS will continue to manage visitor use through the Wilderness permit system, and to manage vegetation through prescribed fire and controlled burning practices when necessary and appropriate.

Condition Assessment

ORV Condition at the Time of Designation (1987)

No visual resource studies were conducted for these segments of the Merced River. The wild segments of the South Fork Merced were largely natural and undisturbed at the time of designation, including no roads and few trails.

Scenery viewed from within the Merced River corridor above Wawona, in Segment 5, was limited primarily to views of the South Fork itself at trail crossings, and long range views from the trails to nearby ridges and forests. Below Wawona, Segment 8 of the Merced River passes into an area of dense montane forest, with limited views of rugged mountains and steep canyons.

Current ORV Condition

Views from the river, banks, and trails in the South Fork Merced River, both above and below Wawona, continue to have high aesthetic value, as they did at the time of designation. Three scenic viewpoints of the South Fork below Wawona, Segment 8, were identified by the Scenic Vista Management Plan. None have views of the river itself, but refer to the gorge and surrounding mountains. No scenic vista viewpoints have been identified in Segment 5, above Wawona.

Both segments are susceptible to regional air quality impacts. The rates of visitor use here are among the lowest in the park. Unlike Segment 1, no trail follows the river. Segment 5 is accessible only from two trails that cross the river at perpendicular angles. Segment 8 is not accessible by trail and is rarely visited by kayak. Scenic resources are primarily appreciated from a distance.

Management Indicator and Monitoring Program for ORV 18

Because Segments 5 and 8 are classified as wild, and because Segment 5 includes designated Wilderness, no further development or resource extraction can occur and scenery will remain unchanged. Management standard, adverse impact, and degradation are not defined for this ORV because any structures proposed in the Wilderness would be subject to the Minimum Requirements Analysis (MRA), as well as the contrast analysis discussed under ORV 16 (with a maximum contrast rating of 4, with no strong contrasts present). Therefore, the NPS would not monitor the condition of this ORV as part of the *Final Merced River Plan/EIS*.

Conclusion: Protecting and Enhancing Scenic ORV 18 (Scenic Views along the South Fork)

The Merced River's Scenic ORV 18 currently has no adverse impact, degradation, or management concerns. As a segment located almost entirely within protected Wilderness, the Scenic ORV for Segment 5 will remain wild and will not be affected by human activity; similarly, as a segment managed as Wilderness, the Scenic ORV for Segment 8 will remain wild and unaffected by human activity. The NPS will not monitor visual resources or conditions at site-specific scenic vista points.

RECREATIONAL ORVs

This section describes the program to protect and enhance each Recreational ORV as proposed in the *Final Merced River Plan/EIS*. Two Recreational ORVs exist in the Merced River corridor, each related to specific segment(s) of the river (Table 5-42).

TABLE 5-42: RECREATIONAL ORVS AND ASSOCIATED INDICATORS

ORV Number and Key Resource	Segment(s)	Indicator to be Monitored through Time
19. Wilderness Recreation above Nevada Fall	1	Wilderness Encounters
20. River-related Recreation in Yosemite Valley	2	Visitor Densities at Valley attractions, beaches or trails

Recreational ORV 19—Wilderness Recreation above Nevada Fall

ORV 19—Visitors to federally designated Wilderness in the corridor engage in a variety of river-related activities in an iconic High Sierra landscape, where opportunities for primitive and unconfined recreation, self-reliance, or solitude shape the experience.

Location: Segment 1 (Merced River above Nevada Fall)

Rationale: Wild segments of the Merced River and South Fork Merced River flow from the heart of the Sierra Nevada, with its towering granite peaks and impressive forests. The spectacular, rugged expanses along these segments provide exemplary landscapes for wilderness experiences characterized by solitude, personal reflection, immersion in nature, independence, and self-reliance. Activities are oriented toward primitive travel, camping, exploration, and adventure.

Of the many exemplary recreational activities, a few are particularly distinctive. Hiking or backpacking close to the river gives visitors the experience of spectacular cascades that change seasonally. In spring, visitors experience the sight, sound, and feeling of the powerfully crashing waters. In drier months, the beauty of delicate water plumes becomes the center of attention. Segment 1 offers access to multi-day Sierra Nevada Wilderness trips that are internationally renowned for gorgeous riverside views, undeveloped settings, opportunities for solitude, and wilderness camping near the river.

Management Objective: Provide for high quality river-related recreational opportunities oriented toward wilderness values of primitive and unconfined, or solitary experiences in a setting that is consistent with the wilderness character of the area.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The condition of ORV 19 at the time of designation is reported below for the following key attributes of the wilderness recreational experience: 1) types of activities and participation rates; 2) setting attributes; and 3) the quality of the experience provided.

Recreational Activity Participation: The most common visitor-related activities within the corridor at the time of designation included hiking, backpacking and staying overnight at the Merced Lake High Sierra Camp. The High Sierra Camp was located within a potential wilderness addition and operated by the park concessioner. Guests of the High Sierra Camp were provided rustic overnight sleeping accommodations in tent cabins, filtered drinking water, restrooms, showers, and hot meals. The trail immediately above Nevada Fall was a popular day-hiking destination and Half Dome hikers often camped at a designated camping area in Little Yosemite Valley. Dispersed camping opportunities were available east of Moraine Dome (i.e. in Lost Valley and Echo Valley). Stock animals were used in support of operations at the High Sierra Camp and for NPS administrative purposes.

In 1987, up to 170 permits per day were issued for the six trailheads that provided the most direct access to Segment 1 (Table 5-43). While overnight use for broad geographic wilderness zones was limited by the trailhead permits, actual use levels within smaller areas of Yosemite Wilderness (such as the river corridor) were generally not monitored or regulated. Thus, wilderness permit quotas provide some indication of backcountry use in Segment 1 but are not a precise accounting of actual activity in either the zone or the corridor (Fincher 2010).

TABLE 5-43: WILDERNESS PERMIT QUOTAS FOR SELECTED TRAILHEADS (1987)

Trailhead	Number of Permits Available (Daily) [a,b]
Happy Isles (to Little Yosemite Valley)	35
Happy Isles (LYV Pass Through Access)[c]	10
Glacier Point (to Little Yosemite Valley)	25
Mono Meadow	15
Rafferty Creek	35
Cathedral Lakes[d]	25
Sunrise Lakes[d]	20
Lyell Canyon[d]	50
Total	**215**

[a] These trailheads provide the most direct access to Segment 1.
[b] Trailhead quotas represent the maximum number of people per day allowed to enter the wilderness via each trailhead and are used to manage overnight use in broad geographic areas of the Yosemite Wilderness.
[c] "Pass Through Access" requires permit holders to hike through and past Little Yosemite Valley before camping.
[d] Visitors traveling to the Merced River corridor from the Tuolumne Meadows area generally use the Rafferty Creek Trailhead. A smaller number of visitors using the Lyell Canyon, Sunrise Lakes, and Cathedral Lakes trailheads will travel the distance to the Merced.

Setting Attributes: At the time of designation, hiking trails and camping areas afforded visitors close contact to the river. The recreational experience in Segment 1 was strongly influenced by the scenic value of the alpine landscape and by the power and presence of the river itself. The description of ORV 15 above provides a more detailed description of these scenic values. At the time of designation, both camping areas were undeveloped except for minimal infrastructure provided to protect resources. For example, toilet facilities were provided at the Merced Lake backpackers camp, the Merced Lake High Sierra Camp, and the Little Yosemite Valley camping area. The chemical toilet sump at Little Yosemite Valley was cleaned every few days and the solid waste was packed out by mule. In addition, there were rangers stationed at the Merced Lake Ranger Station (located at its current location) and at the Little Yosemite Valley Ranger Station (which was located near the river). Campers could also purchase meals at the Merced Lake High Sierra Camp as well as use the shower and toilet facilities.

Recreational Experience Quality: At the time of designation, the river corridor in this segment provided opportunities for wilderness experiences characterized by solitude, personal reflection, immersion in nature, and self-reliance. However, both Little Yosemite Valley and Merced Lake, as well as the trails accessing those locations, were characterized by high rates of use with the attendant infrastructure to support that use (toilets, designated camping areas, tent cabins and structures at the High Sierra Camp) as well as regulations and restrictions on camping in certain areas. Thus, opportunities for solitude and primitive and unconfined recreation were relatively limited in those areas. Although no formal surveys documenting visitor satisfaction, perceptions of crowding, or encounter rates had been conducted, the Yosemite Wilderness (which includes the river corridor) was one of the most highly visited wilderness areas in the nation (NPS 2005d). Recreationists could expect to encounter many other hikers as well as stock users, both on the trail and at popular camping areas.

Current ORV Condition

As with the condition at the time of designation, the current condition for ORV 19 is described below with regard to recreational activity participation, setting attributes, and the quality of the recreational experience.

Recreational Activity Participation: The most common visitor-related activities within the corridor today are the same as those occurring prior to designation. Since designation, trailhead quotas have been reduced at Happy Isles, Glacier Point, Rafferty Creek, and Lyell Canyon to protect park resources and wilderness character. As a result, 130 permits are available daily for the six primary trailheads, a reduction of 40 permits relative to 1987.

Visitor use in Segment 1 continues to be concentrated in the part of the corridor that extends from Nevada Fall to Merced Lake. Within this area, the short section of trail from above Nevada Fall to Little Yosemite Valley receives the highest use, in part due to the popularity of climbing Half Dome. Visitors wishing to climb Half Dome from trailheads in Yosemite Valley must traverse this section of the Merced Lake trail. In 2010, the NPS tested a permit system to manage use of the Half Dome climbing cables. The permanent system, adopted in 2013, prevents further increases in use related to this activity. The short stretch of trail immediately above Nevada Fall is also very popular with day hikers seeking a safe place to swim above the falls. Recent estimates of encounter rates for the primary sections of trail within Segment 1 are provided in Table 5-44.

Setting Attributes: While the natural setting for most of the corridor remains unchanged since designation, some facilities have been removed or relocated to address resource concerns and move development away from the river. The capacities of the designated camping areas and High Sierra Camp have not changed since 1987. In 1992, the NPS relocated the Little Yosemite Valley Camping Area and Ranger Station away from the river to its current location, while maintaining the same capacity. In addition, the chemical toilets were replaced with a composting toilet and two fire rings and several bear boxes were added. In the mid-1990s the Merced Lake Backpackers' Camping Area was converted to a designated camping area and relocated to protect the quality of the lakeshore and nearby meadows. In 2001, the toilet sump and sewer line were removed from the previous campsite location. At the Merced Lake High Sierra Camp, the NPS upgraded utility systems, formalized the trails between camp buildings, and restored previously trampled areas to more natural conditions. The Moraine Dome Camping Area remains undeveloped.

Quality of Recreational Experience: The recreational experience in this segment has changed only slightly since designation. The more remote areas of the river corridor provide an opportunity for recreational

experiences characterized by opportunities for solitude, personal reflection, immersion in nature, independence and self-reliance. However, opportunities for solitude continue to be less available in certain locations. Both Little Yosemite Valley and Merced Lake received high levels of use at the time of designation and use is still concentrated in these areas today. Since designation, recreational activities in this segment have also become more intensively regulated by reducing the trailhead quotas for primary access routes and establishing a day-use permit system for the Half Dome cables, which has moderated use levels in the segment. Site and facility changes have also reduced development close to the river and produced more sustainable camping areas.

Management Indicator and Monitoring Program for ORV 19

This section describes the proposed management standard for this ORV including the indicator to be used; the definition of management standard, adverse impact and degradation; and the monitoring program.

Indicator – Encounter Rates for ORV 19

Indicator Description

Solitude is an enduring characteristic of a wilderness experience (Lucas 1964) and is typically measured by the number of encounters that one group (or individual) has with others over a specific period of time (Broom and Hall 2009). A large body of literature exists regarding wilderness encounter monitoring and its relationship to measuring solitude. While some question whether encounters by themselves are sufficient to assess opportunities for solitude, they are widely considered to be the best indicator for this wilderness attribute (cf. Broom and Hall 2009; Cole 2004; Newman 2002; Stewart and Cole 2008; Vandekamp 2011).

As is shown below (see Table 5-44), the management standards selected for different trail sections in Segment 1 reflect this observation. Trail sections farther from Yosemite Valley and other developed areas will be managed to provide a greater opportunity for solitude.

The trail in the corridor to Merced Lake (and beyond) has been divided into separate trail sections for purposes of monitoring visitor use. In a study of encounter rates in the Tuolumne Meadows area, such a partitioning was utilized (Broom and Hall 2010). Monitoring for this ORV will be accomplished by measuring the average number of encounters per hour that an individual hiker has with other groups within each trail section, averaged over the summer season.[49]

Definitions of Management Standard, Adverse Impact, and Degradation

Management Standard

The management standard for the Recreational ORV in Segment 1 is that any combination of two trail sections cannot be in violation of their associated section standards for four consecutive years. Additionally, no individual trail section can exceed its trail-section standard for four consecutive years. This approach ensures that segmentwide conditions are being protected, although individual sections of trail may receive

[49] The NPS has chosen to measure encounter rates in terms of the number of groups encountered by others because this is a commonly used measure of crowding that has been shown to influence visitor perceptions of solitude (Pettebone 2013; Watson et al. 2000; Broom and Hall 2009; Roggenbuck et al. 1982). Standards for encounters are derived from Newman (2002). Because the authors of that study utilized a standard based on encounters with people (rather than groups) per day, NPS has used data on use patterns to transform these figures into a standard for groups per hour.

high levels of use at some periods of time (a situation that would be corrected through the triggers for management action shown in Table 5-45 below).

Trail Section Standards

In a parkwide study of wilderness users in Yosemite, Newman (2002, 25) observed that the NPS classifies wilderness camping areas as being in one of three categories, depending on the level of development and opportunities for solitude (See Figure 5-6). Category 1 locations offer "potential for pristine resource conditions, high solitude and low intensity management," while Category 3 areas have "less pristine resource conditions, fewer chances for solitude and higher intensity management conditions." Category 2 areas are representative of mid-range conditions. All of the trail sections to be monitored in Segment 1 were adjacent to camping areas classified as Category 2 or 3.

Research has shown that wilderness users tend to be more "encounter tolerant" when hiking on trails that are proximate to developed areas (Manning 1986; Cole and Hall 2008). As hikers travel farther from crowded frontcountry areas, they become more oriented toward solitude and primitive and unconfined recreation. This is consistent with Newman's (2002) observation that opinions about the appropriate encounter rates for wilderness trails in Yosemite depend on the location and character of the camping area used by the survey respondent.

The standards adopted for evaluating the quality of the Recreational ORV in Segment 1 were derived from Newman's research in Yosemite. The trail section standards listed in Table 5-44 reflect what survey respondents reported as the number of hikers that "should be seen" along the trail each day for the camping area category most closely associated with each trail section. [50]

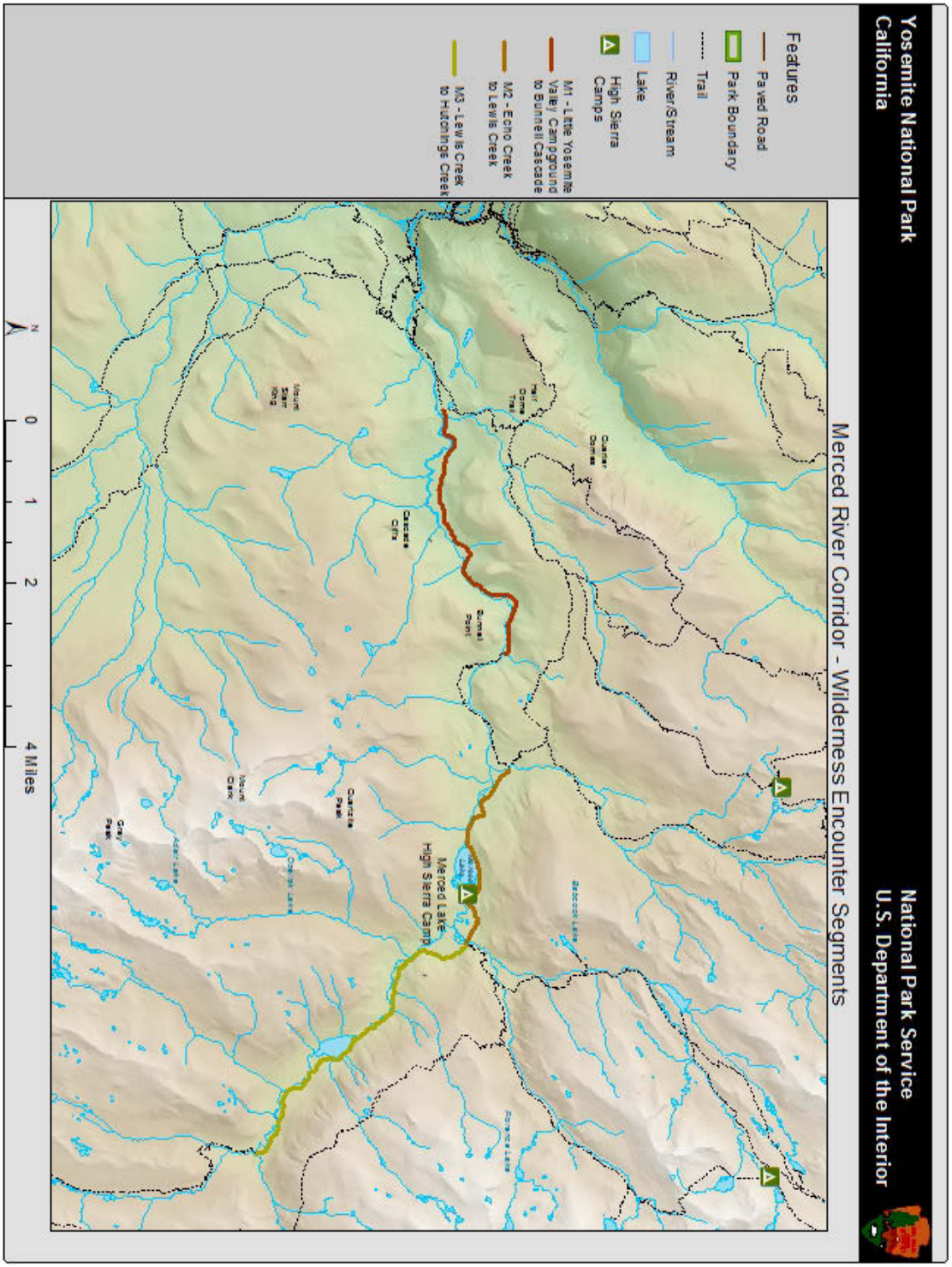
TABLE 5-44: TRAIL ENCOUNTER STANDARDS FOR TRAIL SECTION IN SEGMENT 1

Trail Section	Category[a]	Current Condition[b] Mean Hourly Encounter Rates				Trail-Section Standard (mean encounters per hour)
		2010	2011	2012	2013	
Above Little Yosemite Valley Campground to Bunnell Cascade	2,3[c]	2.11	1.64	1.75	1.98	3
Echo Creek to Lewis Creek	3	3.67	-[d]	4.34	4.52	4
Lewis Creek to Lyell Fork	2	-[d]	.61	1.02	1.55	2

[a] Categories derived from Newman (2002).
[b] The "mean number of hourly encounter rates" is quantified using the predicted hourly encounter rate based on a ten hour day and averaged over the season. Predicted encounter rates are generated from daily automated counter measurements that have been correlated with actual encounters, as reported by trained observers.
[c] This section has been classified as both Category 2 (Bunnell Cascade area) and Category 3 (Moraine Dome area). The standard reflects a mean for the two categories.
[d] Data are not available for these years.

[50] The short one-mile trail section between the top of Nevada Fall and Little Yosemite Valley is located at the wilderness boundary and is already heavily regulated by several permit systems. Backpackers are subject to wilderness trailhead quotas, mandatory entry permits, and campsite regulations. Because the trail comprises the primary access route to Half Dome, use levels on this trail have historically been much higher than elsewhere in the segment. However, in 2011, the NPS initiated a permit system to regulate use of the Half Dome climbing cables to roughly one-fourth of historical peak use levels, with a commensurate reduction in trail use. Under the new permit system, encounter rates along the Half Dome trail are projected to average 16 groups per hour. Currently, hikers between Nevada Fall and Little Yosemite Valley encounter 10-14 other parties while hiking this section. This is comparable to other popular day hikes in the Western U.S. such as Snow Lake in the Mt. Baker-Snoqualmie National Forest, with an encounter rate of 18 groups per hour on weekend days (Cole et al. 1997), as well as other high use trails in Tuolumne Meadows (NPS 2012). Trail use will be monitored as the Half Dome Plan is implemented and further study of use patterns will be conducted in preparation for the Yosemite Wilderness Stewardship Plan.

FIGURE 5-6: SEGMENT 1- TRAIL SEGMENTS FOR MONITORING ENCOUNTER RATES



Adverse Impact

Adverse impact would occur to ORV 19 if encounter rates for all trail sections exceeded their associated trail section standards for five consecutive years. This time frame was selected to ensure that the data do not reflect transient changes in usage patterns due to variation in snowpack or other random events. This situation would constitute a substantial reduction in the quality of the recreational experience on a sustained and segmentwide basis. Under these conditions, the entire 20 miles of trail (from the wilderness boundary to the Lyell Fork of the Merced) would be characterized by unacceptable levels of crowding, and opportunities for solitude would be substantially reduced.

Degradation

Research regarding the appropriate displacement standard for high use trails is challenging to interpret. Although Newman and Manning (2001) found that 42% of Yosemite wilderness users reported that the number of encounters was very or extremely important to them, even more (72%) said having a chance to obtain a wilderness permit was equally important. Cole and Hall (2005 and 2008) found that on trails receiving "high" or "very high" use, most users are not willing or able to provide a standard for encounters when their response might be used to reduce access. Cole and Stewart (2002) reported that "encounters do not matter" to the users of such trails. However, in one study of very high-use areas, visitors did report a median displacement level of about nine encounters per hour (Cole and Hall 2005).[51] Using this as a benchmark, degradation for this ORV would occur if encounter rates for all monitored trail sections reached nine encounters per hour for five consecutive years.

The monitoring program described below, along with the limits imposed on use by the wilderness trailhead quota system, will continue to be implemented to avoid adverse impact and to prevent conditions from reaching the point of degradation.

Monitoring Program to Protect and Enhance Wilderness Recreation above Nevada Fall – Encounter Rates

Encounter rates within the specific sections of trail identified above will be monitored to assess the quality of the Recreational ORV in Segment 1. Of the twenty miles of trail that exist within the river corridor above Nevada Fall, twelve miles will be monitored. These trail sections represent the areas of highest use in Segment 1. All trail sections will be monitored during the entire high-use season (typically late June to mid-September, depending on snowfall). Monitoring will be done on an annual basis, utilizing automated trail counters. NPS staff will periodically conduct direct observation counts of encounters in monitored trail sections to ensure that the equation representing the relationship between automated count totals and encounter rates remains the same.[52] The trigger points for the management actions required to remain within the management standard are reported in Table 5-45.

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[51] Visitors were asked what number of encounters would dissuade them from going to that place.

[52] Encounters are determined based on numbers captured over the course of a 10 hour day, from 8 a.m. to 6 p.m. All selected trails have been monitored with actual observations by trained technicians and volunteers. Automated counts are made using infrared trail counters, with actual encounter rates determined by following methods outlined in Broom and Hall (2010). Automated trail counters are calibrated each season by actual observations to ensure accurate predictions of trail encounters. Mean hourly encounters with other parties per day are determined using a regression analysis with automated counter data as outlined in Broom and Hall (2010). Actual encounters or direct counts would be collected on a five-year rotation, or with more frequency, depending on trends or trigger points being reached.

TABLE 5-45: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR WILDERNESS RECREATION ABOVE NEVADA FALL (ENCOUNTER RATES)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: One individual trail sections have an encounter rates exceeding the trail section standard shown in Table 5-44 for two consecutive years.	Conduct monitoring the following year by direct observation on each section exceeding its trail section standard. Increase the development and distribution of information pertaining to the unique attributes of other trails within the corridor. Encourage visitors to start their hikes earlier or later in the day to avoid periods of peak use on high-use trail sections within the corridor.	To ensure that the Recreational ORV remains protected, the NPS would immediately address early indications of unanticipated increases in encounter rates. More frequent monitoring will allow managers to identify permanent changes in use patterns and take appropriate actions. Management actions, such as education and outreach to visitors, would help to maintain the level of use within the target condition by providing trip-planning information to identify and avoid high use times.
Trigger Point 2: One individual trail section (not the whole segment) has an encounter rate exceeding the trail section standard shown in Table 5-44 for three consecutive years or two sections have an encounter rate exceeding their respective trail section standards for three consecutive years.	Make necessary changes in the wilderness permit system, zone capacities, and/or commercial services to better manage for opportunities for solitude.	Quotas and zone capacities manage the amount of overnight use in Segment 1.These actions would assist in providing the opportunities for solitude for each trail section that is specified in TABLE 5-44.

Management to Protect and Enhance Wilderness Recreation above Nevada Fall (ORV 19)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 19)

Table 5-46 compares the current condition of ORV 19 to the definitions of management standard, adverse impact, degradation, and management concern.

Management Concerns and Actions to Protect River Values (ORV 19)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-45. As shown in Table 5-44, most reported encounter rates are within trail section standards. However, in both 2012 and 2013, encounter rates on the trail section from Echo Valley to Lewis Creek exceeded the trail section standard. Therefore, the NPS will conduct direct observations on this trail segment and collect additional data to ensure that the indirect counts from 2012 and 2013 reflect the actual visitor experience on this trail segment.

TABLE 5-46: CURRENT CONDITION OF RIVER-RELATED RECREATION IN SEGMENT 1

Metric	Current Conditions
Meets management standard: Any combination of two trail sections cannot be in violation of their associated section standards for four consecutive years. No individual trail section can exceed its trail-section standard for four consecutive years.	
Management concerns present: Individual trail sections have an encounter rate exceeding the trail section standard shown in Table 5-44 for two years. (Trigger 1) One individual trail section (not the whole segment) has an encounter rate exceeding the trail section standard shown in Table 5-44 for four consecutive years or two segments have an encounter rate exceeding their respective trail section standards for two consecutive years. (Trigger 2)	In 2012 and 2013 the trail section from Echo Creek to Lewis Creek exceeded the trail section standard (Trigger 1).
Adverse impact: Encounter rates for all trail sections exceeded their associated trail section standards for five consecutive years.	None present
Degradation: Encounter rates for all trail sections met or exceeded nine encounters per hour for five consecutive years.	

Localized Concerns and Enhancement Actions (ORV 19)

There are no localized concerns for the Merced River's Recreational ORV 19.

Conclusion: Protecting and Enhancing Recreational ORV 19 (Wilderness Recreation above Nevada Fall)

The Merced River's Recreational ORV 19 currently has no adverse impact or degradation but management concerns are present for the trail section between Echo Creek and Lewis Creek. This will be addressed through the actions described above.

Recreational ORV 20—River-Related Recreation in Yosemite Valley

ORV 20—Visitors to Yosemite Valley enjoy a wide variety of river-related recreational activities in the Valley's extraordinary setting along the Merced River.

Location: Segments 2A and 2B (Yosemite Valley)

Rationale: Every year millions of visitors from around the world come to Yosemite Valley to recreate in and along the Merced River. Well-known and iconic features such as El Capitan, Yosemite Falls, and Half Dome provide a dramatic backdrop shaping the experience of first-time and return visitors alike. Visitors realize these experiences through a wide variety of activities occurring in and along the river. Activities include active pursuits such as hiking, biking, swimming, floating and water play, climbing, camping, or fishing; creative pursuits such as writing, painting, photography, and other arts; and educational and interpretive pursuits such as attending ranger-led walks and programs. Social elements, such as group camping and picnicking, are integral to many activities, while others offer opportunities for solitude and reflection.

Overall, the Yosemite Valley segment offers a variety of outstanding opportunities for front-country river recreation for people of all ages and abilities. The Merced River in this segment allows people to immerse themselves in their surroundings, taking in the sights, sounds, and feel of the river and its dramatic backdrop. These experiences, in turn, relieve stress and promote connection to the natural world.

Management Objective: Provide for a diversity of high quality river-related recreational opportunities that allow visitors to directly connect with the river and its environs amidst the spectacular scenery of Yosemite Valley.

Condition Assessment

ORV Condition at the Time of Designation (1987)

The condition of ORV 20 at the time of designation is reported below for the following key attributes of the recreational experience: 1) types of activities and participation rates; 2) setting attributes; and 3) the quality of the experience provided.

Recreational Activity Participation: At the time of designation, Yosemite National Park received roughly 3.15 million visitors annually. Of this, an estimated 74 percent visited Yosemite Valley. Sightseeing was the single most popular visitor activity (reported by more than 90% of visitors surveyed) followed by photography, nature observations, day hiking, and self-guided tours (Gramman 1992).[53]

Setting Attributes: Within both Valley segments, the Merced River enhanced scenic views, shaped the landscape, and provided the setting for a variety of recreational experiences such as fishing, floating, and sightseeing. Natural events, including rockfall and flooding, periodically altered setting attributes; sometimes dramatically. Support facilities for day use, camping and lodging were concentrated in East Yosemite Valley. The West Valley was largely undeveloped.

Recreational Experience Quality: Around the time of designation visitors to Yosemite reported a very high level of overall satisfaction. When surveyed in 1991, 93 percent of auto passengers rated their trip as "very good" or better (Gramman 1992). In most cases, visitors reported that the level of conditions and facilities in the Valley was either the "right amount" or "not enough." The two exceptions were the amount of vehicle traffic and the number of people, which nearly half (45%) of respondents rated as "too much", and 42% indicated that crowds represented a problem.

Current ORV Condition

As with the condition at the time of designation, the current condition for ORV 20 is described below with regard to recreational activity participation, setting attributes, and recreational experience quality.

Recreational Activity Participation: In 2011, Yosemite National Park received an estimated 3.95 million recreation visitors (NPS Public Statistics Office), and an estimated 70% of summer visitors go to Yosemite Valley (Blotkamp et al 2010). The river corridor continues to figure prominently in the recreational experience in the park, both as a scenic backdrop and by providing water-based recreation opportunities. The most common recreational activities in the park include viewing scenery, day hiking, wildlife viewing, and picnicking (Figure 5-7).[54] Since designation, some recreational activities have been managed more intensively to protect natural resources and river values. For example, meadow restoration projects have restricted visitors from hiking in parts of certain meadows concentrating their use on defined trails and boardwalks. Efforts to protect meadows from roadside parking impacts have also removed some parking and required visitors to walk, bike, or take shuttle buses to access certain areas within Yosemite Valley (e.g., Happy Isles).

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[53] Gramann (1992) presents useful information about the condition of the ORV at time of designation, as the park visitation remained relatively stable between these years (3.2 million in 1987 and 3.4 million in 1991).

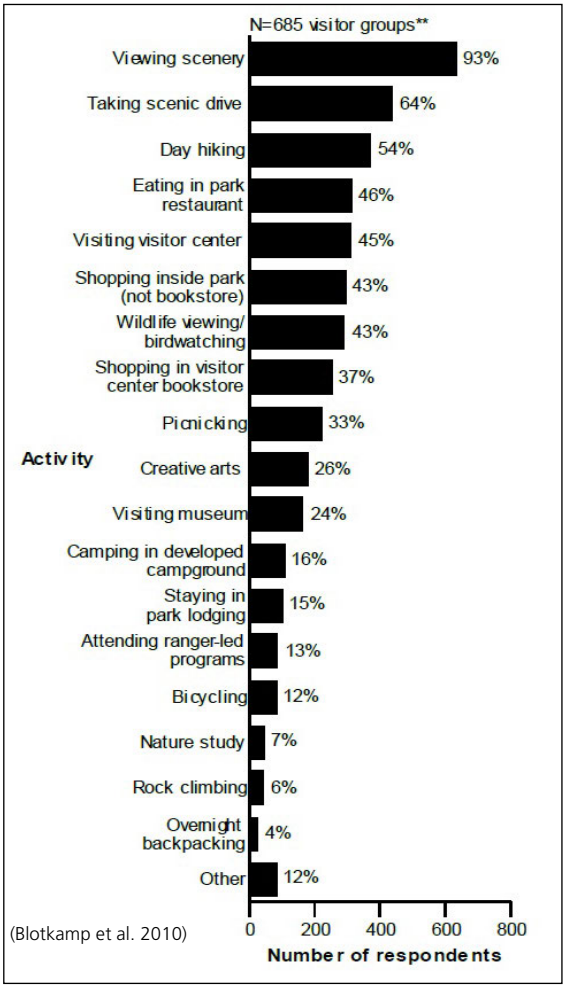
[54] Visitors to Yosemite engage in a number of activities and use facilities that are not included in the Recreational ORV. As shown in Figure 5-7, such activities include shopping and eating in restaurants.

During the 1997 Valley flood, several campsites and lodging units in the corridor were damaged and removed. However, many day-use, camping and lodging facilities are still available (primarily located in the East Valley). Most campsites today in Yosemite Valley are reserved well in advance and fill to capacity throughout the summer season.

Setting Attributes: While the flood of 1997 reshaped parts of the river corridor, the fundamental attributes of the recreational setting that draw people to the Merced River have changed very little since designation.

Recreational Experience Quality: Currently, visitors to the Merced River in Yosemite Valley continue to report a relatively high level of overall satisfaction. According to the most recent visitor survey (2013), most visitor groups (98%) rated the overall quality of facilities, services, and recreational opportunities at Yosemite National Park as "very good" or "good" (University of Idaho 2013).

Figure 5-7: Summer Visitor Activity Participation



While overall satisfaction remains high, the issue of crowding has been a persistent theme in survey findings. A number of studies of visitor use, which collectively span more than a decade of research, indicate that crowding at attraction sites is a periodic problem in Yosemite Valley. Since designation, visitor perceptions of crowding have been periodically evaluated (Manning et al. 1998, 1999; White and Aquino 2008; Lawson et al. 2009). While methodologies and results varied across the studies, all of them found some perceptions of crowding among the visitors sampled. Notably, up to 80 percent of those sampled in one survey (regarding Bridalveil Fall) stated that they felt at least "somewhat crowded" during their visit (Manning et al. 1999).

Management Indicator and Monitoring Program for ORV 20

This section discusses the proposed management program for the Recreational ORV in Segments 2A and 2B, including the indicator to be used to assess conditions and measureable thresholds for management standard, adverse impact, and degradation.

Indicator – Visitor Densities

Indicator Description

Crowding, in terms of numbers of people or boats, has been shown to negatively affect the quality of the visitor experience (Whittaker and Shelby 2010). Normative research has found that people can identify site-

specific thresholds for crowding and that these norms can help inform social indicators and standards (Manning et al. 1999; Shelby et al. 1983; Shelby et al. 1989). The degree of crowding occurring at several locations in Yosemite Valley will be used to evaluate the condition of the Recreational ORV.

The term "visitor density" refers to the number of people in a given area; it is a common descriptive measure that is usually correlated with "perceived crowding," which is a negative evaluation of that density. Densities (use levels) are monitored in units that are appropriate to the specific location being monitored. Monitoring locations have been chosen to represent a range of recreation opportunities, activities, and experiences in both the East and West Valley.

Each site was selected to represent a certain level of use for the activity (e.g., low use trail or high use shoreline). If natural events (e.g., a rock slide or flood), or design changes (e.g., a trail is re-routed, widened, or narrowed) influence the fundamental character of the location, new monitoring sites will be identified as needed to ensure that the same mix of uses is represented in the monitoring program. For example, if a high use beach becomes low use because it partially washed away, or is muddy, a different beach may be chosen as a replacement. As another example, if the character of an attraction site (e.g., Bridalveil Fall viewing platform) fundamentally changes due to a natural event or is redesigned, additional visitor surveys may be conducted to assess perceptions of crowding based on the new configuration. The results may necessitate revision to site-level standards.

The nine monitoring sites include many iconic attractions (such as Bridalveil Fall and Yosemite Falls) visited by more than half (52% and 59%, respectively) of all visitors to the park in the summer (Blotkamp et al. 2010), and exhibit some of the highest levels of visitation in Yosemite Valley (Pettebone et al. 2008).[55] Management standards for this indicator have been developed based on the analysis of visitor perceptions of crowding at a variety of locations within Yosemite Valley (Manning et al. 1998; Manning et al. 1999; Whittaker and Shelby 2012) and in other similar locations. The following definitions apply to this indicator:

- **Visitor Densities:** Densities are a calculation of people within a known geographic space displayed as X feet^2 per person.[56]
- **Boats at one time (BAOT):** Boats at one time is defined as the number of boats visible in a geographically defined section of the river at one point in time.
- **People per Hour:** People per hour is defined as the number of people passing by a specific location within an hour. It is used to measure use level on relatively low use trails where visitor density is not an appropriate measure.

Research data to inform the standards were collected using a survey-based photo evaluation technique. In these studies, visitors were presented with a set of images depicting different levels of visitor use at particular locations (see Appendix S). Respondents were asked a series of questions to determine the number of other people (people-at-one-time, or PAOT) that they that they "preferred" to see, the number of other people that they found "acceptable," and the number that would cause them to avoid visiting the location in the future (referred to as the "displacement" level). The "acceptable" level was used to inform both the management standard and the condition of adverse impact. The "displacement" level was used to inform the degradation value. Study findings were then converted into the visitor densities reported below by dividing the area in the photo frame by the number of people in the photo. Table 5-47 reports the area within the survey photograph, the PAOT correlating to visitor satisfaction levels, and resulting visitor densities.

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55 Two of the "sites" are composite averages of three low-use trails and three low-use beaches.
56 Visitor densities will be used to describe visitation levels at viewing platforms, beaches, and high use trails.

TABLE 5-47: CONVERSIONS FROM VISITOR-INFORMED "ACCEPTABLE" AND "DISPLACEMENT" PAOT TO VISITOR DENSITIES

Location	Photo Area	"Acceptable" PAOT/BAOT	"Acceptable" Density (ft2/person)	"Displacement" PAOT/BAOT	"Displacement" Density (ft2/person)
Bridalveil Fall Viewing Platform	390 ft^2	20	20	28	14
Yosemite Falls Viewing Platform	1225 ft^2	61	20	94	13
Vernal Fall Trail	860 ft^2	26	33	40	22
High Use Beach	4800 ft^2	48	100	80	60
Boats At One Time	500 ft	14	NA	22	NA

Similarly, site monitoring will consist of counting the number of people-at-one-time within the constraints of a defined area to arrive at a density, expressed in terms of square feet per person (Lawson et al. 2009).[57] For low use trails, automated trail counters will be used to count the number of people passing the location within each hour.

To estimate current conditions at Yosemite Falls, Bridalveil Fall, and the Vernal Fall trail in terms of visitor densities and PAOT at the busiest times of the year and times of the day, simulation models were run (Lawson et al. 2008; RSG 2013). The models were developed in 2008 from data collected at each location about hiking patterns and travel times. Trail counter data were then entered into the pedestrian models to predict average PAOT (which can be converted to visitor densities) at each study location. For example, in 2011, the average PAOT on the trail to Vernal Fall during the busiest two weeks of the summer (late May-early June) and during the busiest six hours of the day, was 11 (each person had 80 square feet of space), which is a substantially better condition than what survey respondents said they would accept (33 square feet, Table 5-47)[58].

A similar procedure was used to calculate the density at the Lower Yosemite Fall viewing platform during the busiest two weeks of the year for that location (late June-early July, 2010). On average, during the busiest six hours of the day, each person had 35 square feet of space available to them, which is 15 square feet more space than the "acceptable density" from the visitor survey (Table 5-47). Visitor densities were also modeled for the Bridalveil Fall viewing platform. For the six busiest hours of the day in the peak season of 2011 (late June-early July) the model projected an average PAOT of 35. This translates into 11 square feet per person; a condition that exceeds the displacement density for the site[59]. All action alternatives include management actions to address crowding at this location.

In 2011, use levels were documented for two high-use beaches (Housekeeping and Swinging Bridge). Between noon and 6 pm, an average of 40 people-at-one-time (PAOT) was observed at Housekeeping Beach. Under these conditions, each visitor would have more than 300 square feet of space, even if all were

[57] The number of people present within a defined space (i.e., a density) is a preferable basis for standards as compared with the more generalized PAOT for several reasons. First, densities provide a standardized metric for evaluating crowding at different locations. Densities also provide a mechanism to maintain the same standard even if natural events or future design changes alter the size and configuration of a selected monitoring location. This is an especially critical component for shore locations that are subject to high water events that alter beach locations, sizes, and shapes. Water level changes during the summer also significantly alter the beach area that is accessible for recreation. Other locations such as trails and attraction sites might also be altered by natural events such as rock slides. The square footage of trail or viewing platform monitoring site might also change if the area is re-designed.

[58] Monitoring data from June and July 2011 indicate that the average PAOT for the Vernal Fall trail is about 9.2 PAOT or 93.5 ft^2 per person.

[59] Modeling for the recreation sites was designed to measure the busiest times of the season during the baseline year (2011). More recent monitoring data, collected in June 2012 and June-July 2013, suggest that use at Bridalveil Fall is often not as busy as modeling suggested. Average PAOT for these more recent years was calculated to be 20.2 which translates to 19.3 ft^2 per person.

clustered near the shoreline. Use was slightly lower at Swinging Bridge (36 PAOT), which equates to at least 525 square feet of space per person.

Although the primary attraction sites of Bridalveil, Yosemite and Vernal falls attract large numbers of visitors, other locations along the Merced River experience much lower levels of use. For example, in July and August of 2013, trail counters revealed that on average only 21 people per hour hiked on eight low-use trails in Yosemite Valley (between 10 a.m. and 4 p.m.). Similarly, visitor use counts at five low-use beaches in August 2013 found them to be unoccupied 87 percent of the time. When low-use beaches were occupied, each person had an average of at least 1,500 square feet of space.

As part of a larger study of river users in 2011 (a high water year), all rafts and boats (commercial and private) were counted in the vicinity of Swinging Bridge. During the peak boating season of July and August, and the peak time of the day (noon to 6 pm), researchers observed an average of six boats-at-one-time (BAOT) per 500 feet of river, far less than the visitor stated acceptable level of 14 BAOT.

Definitions of Management Standards, Adverse Impact, and Degradation

Management Standard

The management standard for ORV 20 is that no more than half (50%) of the monitored locations may exceed their site-level standard (Table 5-48) for three consecutive years[60]. This standard for social condition is adapted from peer-reviewed literature (Manning et al. 1999; Whittaker and Shelby 2012; Lawson et al. 2008; Manning and Lawson 2003) using professional judgment. The use of this standard accounts for temporary spikes in use that do not necessarily reflect segmentwide congestion and crowding. Exceeding the standard would indicate that more than half of the sites monitored are experiencing crowding beyond what visitors consider "acceptable," on more than a transient basis.

TABLE 5-48: SITE-LEVEL STANDARDS FOR THE RECREATION ORV VISITOR DENSITY INDICATOR

Location	Units	Current Condition	Site-Level Standard	Site-Level Displacement Value
Recreation Sites				
Yosemite Falls Viewing Platform	Square Feet Per Person	35	20	13
Bridalveil Fall Viewing Platform		11	20	14
Vernal Fall Trail		80	33	22
Housekeeping Beach (High-use)		300	100	60
Swinging Bridge Beach (High-use)		525	100	60
Average of Three Low Use Beaches[a]		1,500	250	60
Average of Three Low Use Hiking Trails[b]	People Per Hour	21	50	100
Boating				
Stoneman Bridge to Sentinel Beach (High Use)	BAOT Per 500 Feet	6	14	22
Sentinel Beach to Pohono Bridge (Low Use)		N/A	6	22

NOTES:

[a] Low-use beaches include, but are not limited to: Slaughterhouse Meadow (East of Devil's Elbow), El Cap Beach, and Superintendent's Beaches

[b] Low-use trails include, but are not limited to: East Valley Loop Trail between the Chapel and LeConte Memorial, West Valley Loop trail east of Slaughterhouse Meadow, and the West Valley Loop Trail east of Bridalveil Meadow.

[60] This standard is violated if any 5 sites exceed their site level standard each year for three years. They do not need to be the same sites each year.

Adverse Impact

An adverse impact would occur when all monitored locations exceed their site-level standard (Table 5-48) for three consecutive years. Adverse impact for social standards is adapted from peer-reviewed literature (Manning et al. 1999; Whittaker and Shelby 2012; Lawson et al. 2008; Manning and Lawson 2003) using professional judgment. Reaching the point of adverse impact indicates a segmentwide problem, in that all sites are experiencing crowding beyond what visitors consider "acceptable," on more than a transient basis. It is consistent with the definition of "adverse impact" used in this plan as a substantial, segmentwide reduction in the condition of an ORV requiring immediate action by the NPS to remedy.

Degradation

Degradation would occur for this ORV if more than half (50%) of the monitored locations exceeded their site level degradation value (Table 5-47) for three consecutive years. Using professional judgment, the condition equating to degradation was adapted from peer-reviewed literature on visitor-reported displacement levels (Manning et al. 1999; Whittaker and Shelby 2012; Lawson et al. 2008; Manning and Lawson 2003). Under a degraded condition, more than half the monitoring sites would reach visitor densities consistent with displacement, on more than a transient basis. This is consistent with the definition of "degradation" in this plan as a long-term loss in resource value that is segmentwide, and which can only be redressed through a sustained change in park management and a significant investment.

Monitoring Program to Prevent Future Adverse Impacts or Degradation – River-Related Recreation in Yosemite Valley

All monitoring sites are located within Yosemite Valley (Segments 2A and 2B). The specific sites and types of locations were chosen to represent a range of recreation activities (visiting attractions, hiking on trails, boating, spending time on the shore or beach) and a range of use levels, as well as a mix of locations from the East and West Valley. Monitoring for each site will take place on at least 14 days during the primary visitation season (defined as May through September). Sampling will take place on weekends and weekdays during peak visitation hours and peak seasons of use at each location. Sampling times will vary by location type to account for differences in peak use times of the day for each activity.[61]

The Yosemite Falls and Bridalveil Fall viewing platform monitoring areas are defined from prior visitor experience research. The Vernal Fall trail site (high use trail) is a 130-foot section approximately 0.25 mile up the paved trail to the fall. The Superintendent's River Section (Stoneman Bridge to Sentinel Beach) and Sentinel Beach to Pohono Bridge River Section are monitored using a BAOT count, which counts the number of boats in a defined 500–foot section of the river. The observed densities at the three low-use beaches will be averaged and compared to the standard. Each site will be geo-referenced to quantify the area so that a density, or amount of area afforded to each person in that space, can be calculated. The number of visitors per hour using the three low use trails will be averaged and compared to the standard.

Table 5-49 lists triggers and specific management responses that would take place should conditions reach the trigger points. Each location (or multi-site location) will be monitored once every three years, unless a trigger is reached and action is taken to increase the monitoring frequency.

[61] For example, sampling will not begin along the shore or on the river (BAOT) until temperatures warm and flows are reduced enough to allow for those activities to occur. Waterfall attraction sites would be sampled earlier in the season when flows and visitation are highest.

TABLE 5-49: MANAGEMENT ACTIONS AND TRIGGER POINTS TO MAINTAIN DESIRED CONDITIONS FOR RIVER-RELATED RECREATION IN YOSEMITE VALLEY (VISITOR DENSITIES)

Trigger Point(s) at Which Management Action Would Be Taken	Required Management Actions (at least one action specified for each trigger will be taken)	Rationale for Management Actions
Trigger Point 1: One to four monitoring locations identified in Table 5-48 (less than 50%) exceed their site-level standard for one year.	Monitor each location that exceeds the standard annually for the next two years. Educate visitors about crowding issues and inform them of alternate recreation opportunities. Take on-site management actions to reduce visitor densities at the location(s) where the standard has been exceeded.	To protect the Recreational ORV, the NPS will continue to gather information about use levels and individual sites to take corrective action as needed to meet the management standard. Management actions, such as education and outreach to visitors, would help to maintain the level of use within the target condition by providing them with information to help plan their trip to avoid high use times. Each site has unique visitation characteristics. Therefore, management actions to reduce visitor densities will be customized to each location or type of location (i.e., shore, river, trail, or attraction site).
Trigger Point 2: Five or more monitoring locations identified in Table 5-48 (more than 50%) exceed their site-level standard for two years.	Monitor all locations annually for the next two years. Adjust commercial use and private vehicle use as needed to reduce crowding. Increase education efforts for overnight visitors to encourage early morning and evening use. Take additional site-specific actions to reduce visitor densities at location(s) where the standard has been exceeded.	Adjustments to commercial use/tour visitation patterns would be made to alleviate crowding during the busiest times of the day and reduce the number of groups arriving at the same time at any given site. Overnight visitors have more flexibility to visit locations earlier or later in the day and messages targeted these audiences may be most effective in redistributing use.

Management to Protect and Enhance River-Related Recreation in Yosemite Valley (ORV 20)

Current Findings Regarding Management Standard, Adverse Impact, and Degradation (ORV 20)

Table 5-50 compares the current condition of the River-Related Recreation in Yosemite Valley to the definitions of management standard, adverse impact, degradation, and management concern.

Both direct observation and simulation modeling indicate that, during peak periods of visitation, use levels at the Bridalveil Fall viewing platform are exceeding the site-level displacement value (RSG 2013).

TABLE 5-50: CURRENT CONDITION OF RIVER-RELATED RECREATION IN YOSEMITE VALLEY

Metric	Current Conditions
Meets management standard: No more than half (50%) of the monitored locations may exceed their site-level standard (Table 5-48) for three consecutive years	
Management concerns present: One to four monitoring locations identified in Table 5-48 (less than 50%) exceed their site-level standard for one year (trigger 1) or five or more monitoring locations identified in Table 5-48 (more than 50%) exceed their site-level standard for one year (trigger 2).	Use levels at Bridalveil Fall exceed the displacement value for this site.
Adverse impact: All monitored locations exceed their site-level standard (Table 5-48) for three consecutive years.	None present.
Degradation: More than half (50%) of the monitored locations exceeded their site level degradation value (Table 5-48) for three consecutive years.	

Management Concerns and Protective Actions (ORV 20)

Management concerns occur when the condition of a resource has reached one of the trigger points identified in Table 5-49. As noted above, the use levels at the Bridalveil Fall viewing platform exceed the displacement standard for this site, triggering the first trigger. In response, the *Final Merced River Final Plan/EIS* includes a commitment to redesign access and parking at this location to improve visitor access and provide less crowded conditions. Project level design and compliance will be initiated following plan completion.

Using the outcome of simulation modeling coupled with direct observations at other locations, planners have confirmed that the Bridalveil Fall viewing platform is the only location where use levels exceed the site-level standards reported in Table 5-48. Any management concerns identified in future monitoring will be addressed in accordance with the provisions of Table 5-49.

Localized Concerns and Enhancement Actions (ORV 20)

While still somewhat below the threshold for management action, use levels at Yosemite Falls appear to be approaching the site-level standard on peak hours of peak days. Further monitoring is needed to assess the factors contributing to this situation to determine what management actions are likely to be effective if the standard is breached.

Actions to address localized concerns pertaining to other ORVs will also enhance the Recreational ORV in these river segments by virtue of improving the recreation setting. For example, actions to restore riverbanks will diminish the visual impact of erosion while protecting riparian habitat. Additionally, the user capacity management program, along with targeted improvements to the transportation system, will improve access and facilitate the public use and enjoyment of all ORVs, including river-related recreation.

Conclusion: Protecting and Enhancing Recreational ORV 20 (River-Related Recreation in Yosemite Valley)

The Merced River's Recreation ORV 20 currently has no adverse impact or degradation, but based on available information, there is one management concern at Bridalveil Fall, which is addressed through the actions described above. There are also localized concerns regarding crowding at a number of locations in Yosemite Valley. To prevent these issues, and others, from redeveloping, the NPS will manage user capacity

standard and that the Recreational ORV is protected and enhanced. Should specific trigger points be hit at any given site, the NPS would implement a series of actions aimed at redistributing visitor use to maintain conditions at or above the management standard.

CONCLUSION

Protecting river values will be accomplished through the means identified in this chapter, and actions designed to enhance river values are presented in "Alternatives" (Chapter 8). To ensure that visitation does not adversely affect or degrade all river values, the *Final Merced River Plan/EIS* specifies a user capacity for each alternative as well as the means by which those capacities will be enforced.

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6. USER CAPACITY AND VISITOR USE MANAGEMENT

INTRODUCTION AND BACKGROUND

The intent of this chapter is to clarify how several components of the *Final Merced River Plan/EIS* work together to meet the Wild and Scenic Rivers Act requirement to address user capacities when preparing a comprehensive river management plan. The user capacities presented in this chapter were derived from a series of interrelated analyses that are discussed in greater detail below, in Chapters 5 and 7, and in Appendix S. The following section provides a brief overview of the framework used to develop user capacities.

The 1982 *National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas* (Secretarial Guidelines) define carrying capacity as:

> "the quantity of recreation use which an area can sustain without adverse impact on the outstandingly remarkable values and free-flowing character of the river area, the quality of recreation experience, and public health and safety."[1]

Under the Secretarial Guidelines, public use should be regulated and distributed where necessary to protect and enhance river values. Public use may be controlled by limiting public access to the river, by issuing permits, or by other means available to the managing agency through its general statutory authorities.

The U.S. Court of Appeals for the Ninth Circuit has interpreted the WSRA requirement for the NPS to "address. . .user capacities" to mean that the Merced River Plan "must deal with or discuss the maximum number of people that can be received in the river area." To do so, the NPS must "adopt specific limits on user capacity consistent with both the WSRA 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."[2]

Decisions about user capacity are embodied within a comprehensive set of management actions which are packaged together to form different alternatives in the plan (Haas 2003; Whittaker et al. 2010). The alternatives represent different choices about the type of land use that will occur in Yosemite Valley—a relatively small area bounded by rock fall hazard zones, floodplains, and riparian and meadow ecosystems. Within this limited space, choices about the mix of overnight versus day-use accommodation and development versus open space have a direct link to the associated capacities for visitor use. Alternatives with higher levels of use require more intensive measures to direct and control that use, such as strategically-placed fencing to protect riparian habitat and guide users to more resilient river access points. Given the interplay among resource protection measures, infrastructure placement and design, and the type of visitor experience to be provided, management alternatives can bracket a wide range of user capacities while remaining consistent with the protection of river values. All of these relationships have been examined and integrated into the development of the *Final Merced River Plan/EIS*.

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1 Guidelines at 39455. Elsewhere in the Guidelines, carrying capacity is defined slightly differently as "the quantity and mixture of recreation and other public use which can be permitted without adverse impact on the resource values of the river area." Id. At 39459.These definitions are similar, but the definition quoted in text above is somewhat broader in that it references protecting both the quality of the recreation experience and health and safety. WSRA and the Secretaries' Guidelines use the terms "carrying capacity" and "user capacity" interchangeably.

2 *Friends of Yosemite Valley v. Kempthorne*, 520 *F.3d* 1024 (9th Cir. 2008).

During the early stages of the planning process, very high use (i.e. maximum capacity) scenarios were examined, some projected to result in over 25,000 visitors per day to Yosemite Valley. These scenarios produced unacceptable visitor densities at iconic attraction sites such as Yosemite Falls and Bridalveil Fall. Moreover, transportation modeling for Yosemite Valley showed that these use levels could only be accommodated by widening (or adding) roads which would adversely impact the Biological ORV. This exercise determined a numerical limit to user capacity for Yosemite Valley and helped to define the range of reasonable alternatives developed for the Merced River Plan.

Because the protection and enhancement of river values is a primary goal of this plan, the planning process began by identifying measureable indicators for the quality of each river value. Each indicator was assigned a desired condition (management standard) that represented a healthy, fully functioning state. Metrics were also assigned for the conditions of adverse impact and degradation. This set of data points was used to identify the conditions the NPS needed to maintain in order to meet the intent of WSRA for each river value. To determine whether the kinds and amounts of use currently allowed in the river corridor were adversely impacting river values, each river value was assessed and compared to its desired condition. None were found to be adversely impacted or degraded. Some areas of concentrated use were identified for targeted restoration, and the most significant actions were included in the action alternatives. The complete analysis is presented in Chapter 5 and corrective measures are included within each action alternative, as described in Chapter 8.

Next, the NPS addressed whether the facilities and services provided to facilitate the public use and enjoyment of the park were having an adverse effect on river values. After reviewing all of the infrastructure and its placement throughout the river corridor, no adverse impacts to river values were identified. Again, some localized effects were observed and will be remedied through mitigation measures included in the action alternatives. Plans for new facilities and changes to existing operations were also analyzed to ensure that they are necessary for public use. Those facilities that are feasible to relocate outside the river corridor were identified. Those major public use facilities that are both necessary and infeasible to relocate were examined for any potential impacts to river values and modified as necessary to protect river values. The complete analysis is presented in Chapter 7.

Transportation planning was another important part of the process used to determine user capacities. The transportation system serves as a well-documented constraint on the kinds and amounts of use that can be allowed in Yosemite Valley (Segments 2A and 2B). Traffic congestion can have a negative impact on the visitor experience and the use and enjoyment of all river values. Recent studies confirm this for river users (Whittaker and Shelby 2012). The Valley is a narrow box canyon with one road in (Southside Drive) and one road out (Northside Drive). The performance of the existing transportation system generally reaches its limits at approximately 7,000 total inbound cars to the Valley per day (as measured by permanent traffic counters on Southside Drive). At this volume, under the current design, outbound lanes reach capacity and the level of traffic congestion produces a low level of service for the roadway that may adversely impact the recreational experience for visitors.

Traffic simulation models developed for this planning effort, and ongoing traffic monitoring, helped to identify the primary flaws in the transportation system. Intersections at the Yosemite Village Day Use Parking area and the pedestrian crossing near the entrance to Yosemite Lodge are especially problematic. At both intersections, poor road design and a high volume of vehicles and pedestrian traffic result in significant traffic delays, especially during the afternoon hours.

For higher-use alternatives, this Plan provides management actions that will address the existing limitations to the transportation system. Chapter 8 provides an array of solutions for this problem, each of which has been tested with traffic simulation models and has been shown to effectively reduce roadway congestion and to restore the level of service to an acceptable rating.

The need to provide for public health and safety is addressed in all alternatives. For example, the alternatives are consistent with Yosemite Superintendent's Directive 26 which outlines evacuation procedures for Yosemite Valley. Although evacuations may be required for a number of reasons, environmental conditions such as floods, fire, and rock fall have caused the majority of evacuations in the past. A hazardous material incident, a utility system failure, or simultaneous and sustained threats to more than one of the three roads which provide access to Yosemite Valley may also trigger an evacuation. Under all evacuation scenarios, visitor and staff safety take precedence over all other park management activities. These provisions have been integrated into the transportation planning efforts described above, and limit the degree to which the transportation network can be modified.

Similarly, protecting the safety of visitors and employees necessitates restricting some types of development and/or use of existing structures in areas with high risk of rock-fall or flooding. Finally, all alternatives must retain important support infrastructure such as wastewater treatment systems that are sized appropriately for the expected use levels. All of these considerations have been factored into the design of the alternatives developed for this plan. Alternatives that would jeopardize public health and safety were not considered to be viable options.

The alternatives in the *Final Merced River Plan/EIS* provide comprehensive direction for the river corridor and are informed by recent assessments of the condition and quality of river values and the recreation experience. All actions incorporated into each alternative, including choices about user capacities, are designed to address the concerns identified in these assessments and to prevent past problems from recurring. The monitoring program explained in Chapter 5 (which ensures that river values remain protected), the user capacity management program explained in this chapter (which ensures that use limits are not exceeded), and the river value enhancement actions described in Chapter 8 and Appendix E are all key to managing the Merced as a Wild and Scenic River.

The information in this chapter is organized by river segment and provides detailed calculations of user capacity for the river corridor. Appendix S provides a conceptual overview of user capacities, addresses common misunderstandings about the subject, and includes a review of applicable research. Establishing user capacities is only one of many actions that help river managers protect river values, and it is assumed that the reader will consult other chapters in this document to gain a full appreciation of the suite of actions included in the plan to meet the overall objectives of WSRA.

USER CAPACITIES FOR THE MERCED RIVER CORRIDOR

As indicated by recent literature (Whittaker, et al. 2010), user capacities have three basic components: units of use, location, and timing.

Units of Use

In the *Final Merced River Plan/EIS*, user capacities are organized into three primary units of use: overnight use, day use, and administrative use.

Overnight use: This category includes people camping and backpacking within the Merced River corridor or staying overnight at one of the park's lodges, camps, or hotels. Overnight capacity is set for each alternative depending upon the mix of overnight and day use to be provided based on public comment and participation, land constraints, construction costs, and other considerations .Planning for overnight use must address the need for lodging, campgrounds, adequate parking at accommodation sites, food service and retail operations (e.g., food and beverage, grocery, recreation equipment rentals) and other services necessary to support overnight visitation.

Day use: Day use capacities represent the maximum number of day users who can be accommodated in the river corridor at one time. Day users spend all or part of a day in the corridor but then spend the night outside the corridor. This includes individuals arriving by private vehicle, tour bus, or public transit. Day use levels reach a peak during mid-day and the average day user spends about seven hours inside the park (Blotkamp 2009). Much of this use is concentrated in places that are easily accessible by car, such as Yosemite Valley and Wawona, although some day hikers journey further into the wilderness components of the wild river segments. Infrastructure supporting day use includes parking, restroom facilities, picnic areas and river access sites. Planning for day use must address the need for adequate transportation systems for arrival and departure from the river corridor and for distributing use within the corridor. Depending on the alternative, day users may require additional food service and retail operations beyond that provided for overnight use.

Administrative use: This category includes activities by NPS employees, concessioners, and contractors in support of park operations and programs and public visitation. Other park partners, volunteers and service personnel are also included in this use category. Planning for administrative use must address the need for office space, employee housing, parking (for commuters, residents, heavy equipment and service vehicles), food service, fire protection, law enforcement, and emergency medical services.

Location of Use

In the *Final Merced River Plan/EIS,* user capacities are defined for each river segment and, in some instances, for smaller areas where management is needed to ensure that a quality recreation experience is provided. Monitoring and management occur at different scales to control both the amount and distribution of use within the river corridor. This chapter includes a discussion of how visitor use will be managed at the segment level to ensure that all river values are protected and enhanced. Chapter 5 includes a discussion of how the quality of the recreation experience will be maintained by monitoring and managing use at smaller geographic scales (see ORVs 19 and 20).

Timing of Use

All user capacities in this plan are expressed in terms of the maximum number of people at one time (PAOT) that can be accommodated: 1) within each river segment, and 2) at smaller recreation sites that are representative of the Recreational ORV. In contrast, daily visitation is measured and reported as the total number of people that enter the river corridor **over the course of a day**. Estimates of daily visitation can be derived from capacities (PAOT) and are useful for projecting the economic activity associated with each alternative.

Segment 1 (Wild): Merced River Above Nevada Fall

Management Goals and Constraints

The three management goals related to user capacity in this segment include: protecting natural processes, promoting opportunities for solitude and primitive and unconfined recreation, and reducing crowding where necessary. Management constraints that guide the development of user capacities for this segment are:

Level of development. The Wilderness Act states that a wilderness is "an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation" (16 U.S.C. 1131-1136, Section 2c). Similarly, river classifications contained in WSRA guide the level of development appropriate in river segments. Accordingly, "wild" river segments are generally inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted." Under the Guidelines, wild river segments are to have "little or no evidence of human activity," and "shorelines and watersheds within the river area should be essentially free of structures." A few inconspicuous structures of historical or cultural value that exist at the time of designation are permitted.[3]

Resource constraints and site suitability. Wilderness areas provide self-reliant recreation, with few constraints. To protect sensitive resources such as meadows and riparian areas, visitor-use management within Segment 1 is oriented toward encouraging leave-no-trace behavior which is emphasized in the wilderness permitting process and enforceable by law. Regulations regarding campsite location, food canister requirements, fire use and human waste disposal help to protect sensitive resources from human impacts, imposing constraints on the kinds of use that are allowed in the segment.

Wilderness experience. Outdoor recreation in this segment must be consistent with the provisions of the Wilderness Act and provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation." The Merced Lake High Sierra camp existed prior to the designation of the Yosemite Wilderness in 1984. In that designation, Congress provided for the continued use of the camp within an area that is considered to be a "potential wilderness addition." Under NPS policy, potential wilderness additions are to be managed as wilderness "to the extent that existing nonconforming conditions allow."[4]

Overview of User Capacities

Visitor Overnight Use Capacity. Camping in the Yosemite Wilderness has been managed since the 1970s using a zoning and trailhead quota system. The entire wilderness area within the park has been split into zones that are assigned a maximum capacity for overnight use. Capacities are divided among the trailheads

[3] 49 Fed. Reg. 39457 (1982).
[4] Management Policies (2006), Section 6.3.1.

TABLE 6-1: SUMMARY OF USER CAPACITIES BY ALTERNATIVE: MERCED RIVER ABOVE NEVADA FALL (SEGMENT 1)

Alternative	1 (No Action)	2	3	4	5 (Preferred)	6
Note: All capacities reported as People At One Time (PAOT)						
Visitor Overnight Capacity						
Wilderness Zone Camping Capacities (Camping is not allowed prior to reaching Little Yosemite Valley Designated Camping Area from trailheads within Yosemite Valley.) Adjusted Wilderness zone capacities for area within river corridor and related planning boundary: assumes ability to camp out of sight and sound of other parties and the availability of minimum impact camping area along the segment.						
Little Yosemite Valley Zone (Camping only at designated sites) There are 4.5 miles of trail in this zone that parallel the river	150	25	75	100	150	150
Merced Lake Zone Although 8.5 miles of hiking trail parallel the river in this zone, most camping occurs at the Merced Lake Backpackers Camp. Estimated capacity of 50 people at one time for all alternatives.						
Washburn Lake Zone Although the river corridor includes only a fraction of this zone, most overnight use in the zone occurs along the river. Small amounts of camping occurs at Washburn Lake, along the Triple Peak Fork, and on the Lyell Fork. A small amount of camping occurs outside of the corridors at places like Harriet Lake or along the High trail. Study data show that use for the zone never exceeded 50% of capacity in 2009 (van Kirk 2011). A hiking trail parallels the river for 12 miles within the zone. Estimated capacity of 100 people at one time for all alternatives.						
Mount Lyell Zone The river corridor overlaps with only a small fraction of this zone. A negligible amount of overnight use occurs in this rugged, trail-less zone. Two hiking trails cross the Lyell Fork of the Merced, traversing the ½ mile width of the river corridor. No trails within the zone run parallel to the river corridor. Estimated capacity of 10 people at one time for all alternatives.						
Clark Range Zone The river corridor accounts for only a small fraction of this zone. Most overnight use in this zone occurs at Lower Ottoway Lake, with minimal use also occurring at Red Devil Lake. A hiking trail crosses the highest reaches of Red Peak Fork and Merced Peak Fork (3 miles of trail in the corridor). No trails within the zone run parallel to the river corridor. Estimated capacity of 10 people at one time for all alternatives.						
Merced Lake High Sierra Camp	60	0	15	0	42	60
Total Visitor Overnight Capacity	**380**	**195**	**260**	**270**	**362**	**380**
Visitor Day-Use Capacity						
Day Hikers to Half Dome	75[a]					
Other Day Hikers	50					
Total	**125**					
Administrative Use Capacity (Overnight and Day-Use)						
Employee Housing	25	5	15	10	25	25
Administrative Day-Use	5					
Total	**30**	**10**	**20**	**15**	**30**	**30**
TOTAL SEGMENT CAPACITY	**535**	**345**	**405**	**410**	**517**	**535**
Stock-Use Capacity Merced Lake HSC Routine Supply Above Nevada Fall to Merced Lake	No Limit	MLHSC Closed	Season-long average of 7.5 strings per week	MLHSC Closed	Season-long average of 7.5 strings per week	
Grazing Capacity (Merced Lake East Meadow, NPS administrative stock only)	No Limit	0 nights (pellet feed only)	58 pack stock nights annually	0 nights (pellet feed only)	58 pack stock nights annually	58 pack stock nights annually

NOTE:

[a] The Half Dome permit system is designed to allow 225 day hikers to use the cables each day. As the Half Dome hike is located inside Segment 1 for only one mile (each way), for purposes of this analysis, it is assumed that one-third of potential Half Dome hikers may be in the corridor at any one point in time.

that access each zone and managed by mandatory entry permits. The *Final Merced River Plan/EIS* relies upon this permit system as the primary mechanism for ensuring that overnight use remains at or below the capacity established for each alternative.

Overnight capacities are listed in Table 6-1 for each wilderness zone that contains a part of the river corridor. The capacities reported here are adjusted zone capacities and are intended to account for use only within the area of intersection between the corridor and the wilderness zone. As such, they are not managed independently of their respective zone capacities, but are reported here to provide a complete accounting of the kinds and amounts of use likely to occur in the river corridor for Segment 1. As discussed below, the presence of hiking trails along the river corridor within the zone and the distance from trailheads is expected to influence use levels, with the more remote and less accessible sections of the river corridor assigned a relatively low percentage of total zone capacity.

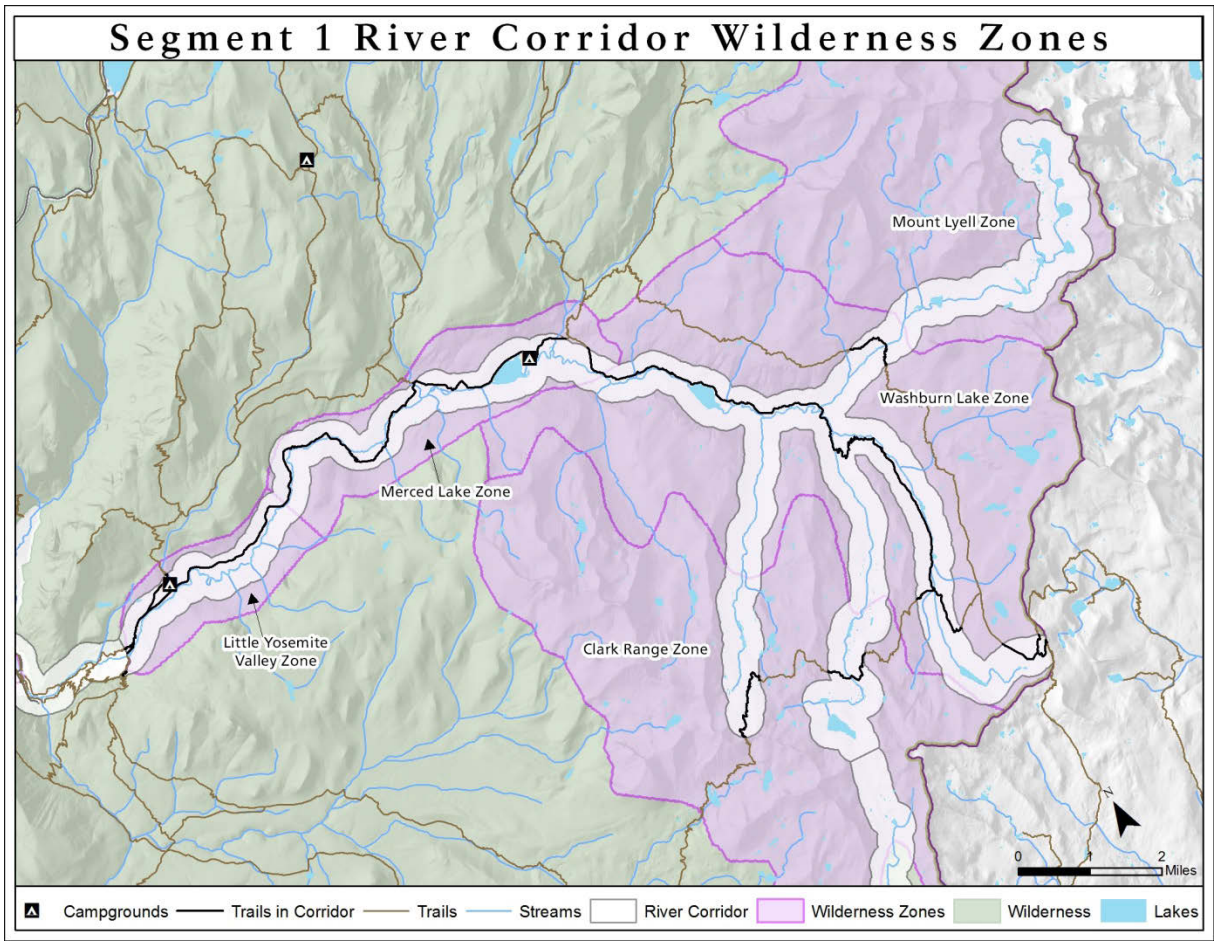
Camping in the Little Yosemite Valley wilderness zone is limited to the designated camping area within Little Yosemite Valley. Dispersed camping is allowed in the Merced Lake, Mount Lyell, Washburn Lake and Clark Range zones of this segment with additional designated camping areas located at Moraine Dome and Merced Lake camping areas.

As noted in Figure 6-1, the extent to which the river corridor overlaps with wilderness zone boundaries varies substantially. Established hiking trails run parallel to the river in the Little Yosemite Valley and Merced Lake zones, and for at least four miles in the Washburn Lake zone. Note that both the Mount Lyell and Clark Range zones include only a very small length of trail within the river corridor. Overnight use occurring in the corridor is likely to be minimal as a result. While the river corridor within the Washburn Lake zone includes a substantial length of trail, with the exception of Washburn Lake itself, locations in this part of the river corridor are less popular due to their remote location. Thus, the primary locations for overnight use in this river segment are the Little Yosemite Valley and Merced Lake Wilderness zones, both of which lie entirely within the river corridor and serve as overnight destinations for Half Dome hikers and hikers completing the High Sierra Camp loop. The proximity to Yosemite Valley, the popularity of the hike to Half Dome, and the opportunity to connect to the heavily traveled John Muir trail make the Little Yosemite Valley zone the most heavily visited and most intensively managed area in this segment.

The *Final Merced River Plan/EIS* proposes options that would change the Little Yosemite Valley zone user capacities to provide for a broader range of visitor experiences in Segment 1. Alternatives 2, 3, and 4 reduce the Little Yosemite Valley zone capacity from 150 people to 25, 75, and 100 people, respectively. The lower use levels in these alternatives would require proportionately less infrastructure and lower-intensity management. The designated camping area at Little Yosemite Valley would be eliminated in Alternatives 2 and 3. The composting toilet facility at Little Yosemite Valley would be removed in Alternative 2. Essentially, campers would be able to select their own campsites further from the sight and sound of others in exchange for more limited access. In the remaining wilderness zones, capacities would remain at current levels under all alternatives.

Another type of overnight use in this river segment is the Merced Lake High Sierra Camp in the Merced Lake Wilderness zone. This historic, rustic lodging facility is operated by the park concessioner. The camp is located in an area designated as a potential wilderness addition and surrounded by designated wilderness. The lodging facility provides showers and meal service for guests. Accommodations consist of 22 tent cabins with a current maximum guest capacity of 60 people per night. Camp capacity would be managed by advance reservation under those alternatives that retain camp operations. The current camp capacity is

Figure 6-1: Segment 1 River Corridor and Wilderness Zones



retained in Alternative 6, reduced to 42 people in Alternative 5, and converted to a temporary pack camp with a capacity of 15 people in Alternative 3. Alternatives 2 and 4 eliminate the camp entirely.

Visitor Day Use Capacity. To address day use capacity on the Merced Lake trail above Nevada Fall, the plan primarily relies upon the day use permit system established in 2013 which limits the number of day hikers using the Half Dome climbing cables to 225 per day (NPS 2012j). Visitors with Half Dome permits access the summit by passing through Segment 1 from the wilderness boundary above Nevada Fall to the intersection of the Half Dome trail with the main trail (a distance of roughly one mile). By limiting access to Half Dome, the largest component of day-use on this trail is managed and monitored. This trail section is also used by an estimated 150 day-hikers who explore for short distances upstream from Nevada Fall, with some going as far as Little Yosemite Valley. Day hiking beyond this point drops off significantly due to the round trip distance of at least 8 miles.

Administrative Use Capacity. Administrative use within Segment 1 is primarily associated with wilderness patrols, trail crews, utility and maintenance crews, and search-and-rescue operations. Overnight administrative camps are maintained at Little Yosemite Valley and Merced Lake during the summer. The administrative camps are located away from the river and have no direct impact on river values. Although the maximum overnight capacity for both ranger camps is roughly ten people, actual use levels are much lower. It is estimated that ten concessioner employees reside at the Merced Lake High Sierra Camp with an

additional five employees that support camp operations on an intermittent basis. The *Final Merced River Plan/EIS* alternatives adjust the administrative capacity within this river segment to correspond with the reductions proposed for the wilderness zone capacities. The total overnight capacity for administrative use is set at ten people for Alternatives 2 and 4, 15 for Alternative 3, and the current capacity (25) for Alternatives 5 and 6. Across all alternatives, minimal administrative day use occurs in Segment 1, estimated at no more than five people at one time on day patrols.

Stock Use Capacity. Stock use in the river corridor includes mules and horses traveling the Merced Lake Trail, generally in "strings" of six to seven animals each to supply the Merced High Sierra Camp. Smaller strings of two to three animals each are used for NPS law enforcement and backcountry utilities operations. Generally, stock use is heavier in the opening and closing portions of the season as infrastructure is either being installed or decommissioned at the High Sierra Camp and Ranger camps. This category of use also includes grazing by NPS pack animals in the meadow located to the east of the Merced Lake Ranger Station.

Stock use capacities were developed based on encounter standards with hikers, following from research in nearby Sequoia and Kings Canyon National Parks. The study found that encounters with stock detract from the backcountry wilderness experience, and that average "acceptability" was "no more than three stock parties per day" (NPS, 2013, p. 56). A 2001(Newman and Manning) survey of Yosemite wilderness users also included questions about the acceptable level of stock encounters within parts of the wilderness that are heavily used and intensively managed. On average, respondents reported that the NPS should manage stock use so that hikers encounter no more than three stock parties per day (Newman and Manning 2001).

Currently, the concessioner utilizes seven to eight pack strings per week to supply the Merced High Sierra Camp along the Merced River Trail originating in Yosemite Valley. Because of the distance to the camp, stock animals are held overnight in a corral near the High Sierra Camp and return to the Valley stables the next day (for a total of 14-16 one-way trips per week). Concessioner stock are fed pellet feed and do not graze. Assuming most hikers travel this route once per day, they are unlikely to encounter more than two concessioner pack strings per day.

Administrative stock use by the NPS for the trail section below Washburn Lake is estimated at 330 stock-nights per season. One stock-night is equivalent to one animal spending the night at pasture and two days on the trail. Assuming pack strings of six animals each, NPS-related stock use equates to roughly 110 one-way pack-string trips for a typical 100-day season, or about one trip per day along the Merced River Trail originating in Yosemite Valley (Baseline Conditions Report, Table 2.1-1, page 2.1-14).

Thus, currently a maximum stock encounter rate of three per day (2 concessioner and 1 NPS) is estimated for trails within this river segment. This is the level reported as acceptable by visitors to the Yosemite Wilderness (Newman & Manning 2001). To ensure that stock encounters remain at or below this level, all alternatives that maintain operations at the Merced High Sierra Camp impose a limit of 7.5 strings per week to support camp operations. It is acknowledged that during brief periods of camp set-up and take-down additional stock support may be required. Finally, grazing capacities for NPS stock are set at 58 stock nights per season for Merced Lake East Meadow. Seasonal closures will be implemented for the wet portion of the meadow to allow for recovery. This use is to be reevaluated once the meadow has recovered. Stock users will be required to pack in weed-free pellet feed for the remaining stock nights under all alternatives. This approach to managing grazing capacity responds to the management concern reported for the Biological ORV in Chapter 5 (ORV 1).

Boating Capacity. Current regulations stipulate that "all free-flowing rivers creeks and streams within Yosemite National park, except the Main Stem and South Fork of the Merced River, as defined in this section are closed to the use of any type of vessel designed to carry passengers upon the water and any other device, such as air mattresses or inner tubes, that may be used" (Yosemite National Park Superintendent's Compendium 2012 36 CFR § 1.5(a)(2); 36 CFR § 1.5(f)). This closure includes Segment 1 of the Merced River.

All action alternatives allow non-motorized boating on Segment 1. The plan proposes to allow boating from the Headwaters of the Main Stem Merced River to the junction of the Half Dome and Merced Lake trails. Raft put-ins and take-outs are not designated or otherwise limited in the plan, and users will be free to choose acceptable locations for this use.

TABLE 6-2: SUMMARY OF BOATING CAPACITIES ACROSS ALTERNATIVES

Segment 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Types of boating allowed	Private only	Private only	Private only	Private only	Private only
Mechanism for private use limits	None	None	Permits[a]	Permits[a]	Permits[a]
Use levels	Unrestricted	Unrestricted	5 boats / day	20 boats / day	10 boats / day

NOTE:
[a] All permits for this use are issued as a supplement to the existing backcountry permit.

Commercial Use. Commercial use in Segment 1 is generally comprised of backpacking groups, stock-supported hiking groups, and Half Dome climbers, though other commercial use such as photography may be permitted. Capacity for this use is included within the wilderness zone quotas discussed above. As this segment of river is in designated wilderness, commercial uses are allowed only to the extent necessary for "activities which are proper for realizing the recreational or other wilderness purposes of the areas."[5] See Appendix L for a complete discussion of the regulation and management of commercial use in wilderness.

Relationship of User Capacity to River Values and the Recreation Experience

All river values in Segment 1 currently meet or exceed their established management standards, although there are some localized concerns that are related to the kinds and amounts of use occurring in the river corridor. These include: informal trails at high country meadows, wetlands, and lakeshores; administrative stock grazing at Merced Lake-East Meadow; and localized areas of concentrated use (Chapter 5, ORVs 1 and 19). Solutions to these concerns are itemized in Chapter 5 for the relevant ORV and included as management actions to be carried forward in one or more of the plan alternatives (Chapter 8).

User Capacity and the Recreational ORV. Wilderness Recreation above Nevada Fall (ORV 19) is the river value most directly affected by the amount of use allowed in Segment 1. The indicator for the quality of the recreation experience in this segment is the average number of groups encountered per hour along three sections of trail between Little Yosemite Valley and the Lyell Fork. As discussed in Chapter 5 (ORV 19), management standards vary by trail section.

As illustrated in Chapter 5 (ORV 19) and below in Table 6-3, current conditions are within the management standard.[6] Due to the trailhead quota system and the Half Dome Day Use Permit system, no increases in encounter rates are projected under any alternative. The monitoring program outlined in Chapter 5 for ORV

[5] Wilderness Act, 16 USC 1133 (d)(5)
[6] The management standard for the Recreational ORV in Segment 1 is that any combination of two trail sections cannot be in violation of their associated section standards for four consecutive years. Additionally, no individual trail section can exceed its trail-section standard for four consecutive years.

19 provides a list of increasingly intensive management actions that will be taken in the event that use monitoring shows encounter rates trending toward unacceptable conditions. For more about indicator selection and the development of applicable standards, see the complete discussion of ORV 19 in Chapter 5.

TABLE 6-3: TRAIL ENCOUNTER STANDARDS FOR TRAIL SECTIONS IN SEGMENT 1

Trail Section	Category[a]	Current Condition[b] Mean Hourly Encounter Rates				Trail-Section Standard (mean encounters per hour)
		2010	2011	2012	2013	
Above Little Yosemite Valley Campground to Bunnell Cascade	2,3[c]	2.11	1.64	1.75	1.98	3
Echo Creek to Lewis Creek	3	3.67	-[d]	4.34	4.52	4
Lewis Creek to Lyell Fork	2	-[d]	.61	1.02	1.55	2

[a] Categories derived from Newman (2002).
[b] Mean number of hourly encounters per day measure the average predicted hourly encounter rate based on a ten hour day. Predicted encounter rates are created from daily automated counter measurements that are related to actual encounter observations by trained observers through linear regression and then averaged across the season.
[c] This section has been classified as both Category 2 (Bunnell Cascade area) and Category 3 (Moraine Dome area). The standard reflects a mean for the two categories.
[d] Data is not available for these years in these places.

In addition to human encounters, the recreation experience within Segment 1 is also affected by stock encounters. As discussed above, limits on stock use capacity have been proposed for Segment 1 to ensure that stock encounter rates remain at an acceptable level.

User Capacity Management

The quality of the Recreational ORV in Segment 1 is expected to remain within the management standard under all alternatives, none of which proposes to increase capacity for this segment. Alternative 2 proposes reducing the zone capacity for Little Yosemite Valley and eliminating the Merced Lake High Sierra Camp, which will reduce trail encounters and increase opportunities for solitude. For alternatives that require stock-support to operate the High Sierra Camp, stock use limits are imposed, as described above, to enhance the quality of the recreation experience in this segment.

With the newly-established permit system limiting access to Half Dome and the current trailhead quota system limiting access to the wilderness zones, most visitor use on the trail segment between Nevada Fall and Little Yosemite Valley is already regulated. With the exceptions noted above, the *Final Merced River Plan/EIS* proposes no additional restrictions in any alternative.

Segment 2A (Recreational) and Segment 2B (Scenic): Yosemite Valley

Management Goals and Constraints

The three management goals related to user capacity in this segment include: protecting natural processes, promoting visitor enjoyment, and reducing traffic congestion and crowding. Management constraints that guide the development of user capacity for this segment are:

Resource constraints and site suitability. Natural hazards and highly valued resources include floodplains, rock-fall hazard areas, meadow and riparian areas, rare and sensitive plant and animal populations, scenic vista points, and cultural resource sites. Careful consideration must be given to placing development in proximity to these features, to protect the environment and the government's financial investments. After

mapping river values and resource constraints, limited space remains in Yosemite Valley for the placement of visitor and administrative services and related infrastructure. Conceptual site drawings were completed for primary visitor use and administrative areas to ensure that biophysical constraints could be accommodated by site design. The alternatives propose options for working within these constraints to provide different types of visitor experiences and recreational opportunities.

Transportation system performance. Visitors rely upon personal vehicle, tour bus, and public transit to access Yosemite Valley. Transport within the Valley is supplemented by shuttle buses servicing primary visitor activity nodes. All components of the transportation system must be integrated and coordinated with allowable levels of visitation to ensure that public use is effectively distributed throughout the river corridor. Due to the fact that existing Valley roads are bordered by several large meadow complexes, the Biological ORV serves as a significant constraint on creating additional parking areas or widening the road to improve traffic flow.

Quality of recreation experience. Traffic congestion can negatively impact the public use and enjoyment of river values by hampering access to the river and its recreational opportunities and impeding views of distant vistas. Therefore, an efficient transportation and parking system is needed to facilitate public use and is a prerequisite for a quality recreation experience in these segments.

Providing quality recreational opportunities also requires that visitor use be managed and distributed to avoid unacceptable levels of crowding at popular recreation sites and primary attractions. Several social science studies have documented crowding and congestion problems during peak use periods in Yosemite Valley (Gramann 1992; Littlejohn et al. 2005; Manning, et al. 1998 and 1999; Whittaker and Shelby 2012). Further research has demonstrated the link between visitation, the number and density of people at popular attraction sites, and the quality of the recreation experience (Meldrum & DeGroot 2012). These relationships have been explicitly considered in the development of user capacities for the *Merced River Final Plan/EIS* and, along with the transportation system, were used to evaluate the upper numerical limit for user capacities in Yosemite Valley.

Public Health and Safety. As discussed in the introduction to this chapter, the need to provide for public health and safety is a prerequisite for all plan alternatives. For Yosemite Valley, this includes ensuring that the transportation system provides for orderly evacuation. Because standards established for protecting the Biological ORV foreclosed widening the main roads into and out of the Valley, capacities in Alternatives 2-6 were set at levels that would allow for safe and orderly evacuation in case of emergency. Additionally, all structures within the rock fall hazard zone with risk metrics greater than six have been removed or repurposed to reduce the risk of personal injury (Stock et al., 2012b).

Overview of User Capacities

Visitor Overnight Use Capacity. Each alternative proposes a mix of overnight accommodations, including camping and a range of overnight lodging options for various budgets and family configurations (Table 6-6). As reported in Blotkamp el al. (2010), 14 percent of summer visitors to Yosemite participated in camping and 15 percent stayed in park lodging. Overnight accommodations facilitate public use and enjoyment of river values and add to the types of recreation that can be enjoyed by visitors to the river corridor. Alternative 6 proposes the highest amount of overnight accommodations: nearly double that of Alternative 2 and a 24 percent increase over 2011 conditions.

Segment 2A (East Valley) and Segment 2B (West Valley) have historically-different development patterns, and their segment classifications reflect this. With the exception of the Yellow Pines volunteer campground, no overnight use is currently supported in the West Valley, in part because of the lack of utility infrastructure. In keeping with the theme of lower density recreation opportunities in the West Valley, the action alternatives continue to consolidate overnight use in East Valley. An exception is the new drive-in campground proposed in Alternative 6 in the vicinity of the El Capitan picnic area. This adds an additional 474 PAOT to the overnight capacity of West Valley and would require an extension to the main utility line that runs underneath Northside Drive.

Visitor Day Use Capacity. There currently are no formal mechanisms for limiting the number of day users who gain access to Yosemite Valley. The user capacities reported in Table 6-4 reflect this situation, as the day-use "capacity" reported for the No Action Alternative is higher than the day use capacity for any of the action alternatives. The No Action "capacity" includes circumstances and consequences that are not perpetuated under any of the action alternatives, such as vehicles parked in unmanaged roadside areas and overflow from poorly-delineated parking lots, passengers sitting in traffic due to transportation system design failures, and a labor-intensive program of traffic management to keep transportation systems functioning at an acceptable level of service.

Although day use capacity is reduced in Alternatives 4, 5 and 6, peak daily visitation is expected to remain similar to that observed in 2010 and 2011. This is possible because of planned improvements in transportation infrastructure, additional overnight capacity, provision of day use parking outside of East Valley, and delineation and separation of parking for visitors and employees. The features that aim to better manage visitor use and vehicle access for each alternative are described in the "User Capacity Management" section that follows.

In addition to private vehicles, visitor day use capacity calculations include commercial bus tours and regional transit. Currently, commercial tour buses are required to park in designated spaces to the west of Yosemite Lodge. Each alternative provides a limited number of spaces for this purpose, thereby limiting the number of people at one time that can arrive by tour bus. Growth in visitation from regional transit is ultimately driven by the economic viability of balancing the frequency of service with the costs of repeated trips to outlying communities. Given the time to travel from gateway communities to the Valley and back, a maximum practical number of bus runs was estimated for each transit corridor.

Finally, to fully account for all people in the corridor, the roadway capacity under free-flowing conditions was calculated using the transportation planning model described below (see section on Transportation System Performance and Recreation Experience). The resulting "acceptable roadway capacity" was included in the visitor day use capacities proposed for each action alternative.

No actions are proposed in Alternatives 2-5 that would add capacity to West Valley. Alternative 6 proposes a 250 car day-use parking lot in the vicinity of the El Capitan crossover from Southside Drive to Northside Drive. Although this lot is intended to provide parking for people who are bound for East Valley, for purposes of this discussion, the associated user capacity has been allocated to West Valley. This acknowledges the likelihood that some fraction of visitors parking in this lot may decide to delay travel to East Valley and instead explore the immediate vicinity, seeking easy access to the river and less crowded conditions.

TABLE 6-4: SUMMARY OF USER CAPACITIES BY ALTERNATIVE: YOSEMITE VALLEY SEGMENTS

Alternative	1 (No Action)	2	3	4	5 (Preferred)	6
Note: All capacities reported as People At One Time (PAOT)						
Visitor Overnight Capacity Segment 2A: East Valley						
Campgrounds	2,772	2,796	2,838	4,278	3,912	4,032
Lodging	3,672	1,842	2,069	2,826	3,799	4,380
Sub-Total	6,444	4,638	4,907	7,104	7,711	8,412
Visitor Overnight Capacity Segment 2B: West Valley						
Campgrounds	120	120	120	120	120	594
Total Visitor Overnight Use	**6,564**	**4,758**	**5,027**	**7,224**	**7,831**	**9,006**
Visitor Day Use Capacity Segment 2A: East Valley						
People arriving via Private Vehicle	9,485	4,717	4,172	5,278	6,519	6,070
People arriving via Regional Transit[a]	293	241	241	337	684	788
People arriving via Commercial Tour Bus	720	720	720	720	1,056	720
Sub-Total	10,498	5,678	5,133	6,335	8,259	7,578
Visitor Day Use Capacity Segment 2B: West Valley						
Roadside Parking and West Valley Day-Use Lot	1,254	1,141	1,219	1,219	1,219	1,871
Total Visitor Day-Use Capacity	**11,752**	**6,819**	**6,352**	**7,554**	**9,478**	**9,449**
Administrative Use Capacity Segment 2A: East Valley						
Employee Housing	1,315	658	1,086	1,087	1,029	1,136
Administrative Day Use	332	332	332	332	374	332
Total Administrative Capacity	**1,647**	**990**	**1,418**	**1,419**	**1,403**	**1,468**
Sub-Total User Capacity Segment 2A	**18,589**	**11,306**	**11,458**	**14,858**	**17,373**	**17,458**
Sub-Total User Capacity Segment 2B	**1,374**	**1,261**	**1,339**	**1,339**	**1,339**	**2,465**
TOTAL USER CAPACITY YOSEMITE VALLEY (rounded to nearest 10 PAOT)	**19,960**	**12,570**	**12,800**	**16,200**	**18,710**	**19,920**

NOTE:

[a] Both regional transit and commercial tour bus capacities have been allocated to Segment 2A (East Valley), as all tour buses are required to use designated parking in that segment and all transit drop-off and pick-up locations are located there. These components of the transportation system are common to all alternatives.

Kinds of Use. The preceding discussion of day use focuses on the *amount* of use to be allowed. User capacities also pertain to the *kinds* of use allowed in the river corridor. Public use and enjoyment of the outstandingly remarkable values of Yosemite Valley is not limited to participation in the Recreational ORV, but includes a variety of activities that allow visitors to appreciate and benefit from the protection and enhancement of all river values. For example, in 2009, the vast majority of visitors (93%) reported viewing scenery (i.e. enjoying the Scenic ORV) as an activity in which they participated (Table 6-5). All of the activities identified in Table 6-5 promote the public use and enjoyment of the outstandingly remarkable values of the Merced River and will continue under all action alternatives. As discussed below, these types of uses are not causing adverse impacts or degradation to river values.

It is assumed that future visitors will enjoy the same mix of recreation opportunities in roughly the same proportions observed most recently. Where there are localized impacts from past use, they are addressed in all plan alternatives by redirecting use to more resilient areas and restoring high-use areas to natural conditions (see the sections in Chapter 8 entitled "Actions to Protect and Enhance River Values" for each alternative and Appendix E).

TABLE 6-5: SELF-REPORTED ACTIVITY PARTICIPATION RATES FROM 2009 SUMMER VISITOR SURVEY

Activity	Percentage of Visitors Participating
Viewing Scenery	93%
Taking a Scenic Drive	64%
Day Hiking	54%
Wildlife Viewing / Bird Watching	43%
Picnicking	33%
Creative Arts	26%
Camping in a Developed Campground	16%
Attending Ranger Programs	15%
Bicycling	12%
Nature Study	7%
Rock Climbing	6%
Rafting	.03%
Swimming	.03%
Horseback Riding	.03%
SOURCE: Blotkamp et al. 2010	

The section of river upon which boating is allowed (and how that use is managed) is one exception to the pattern of stability in future recreational activity. During the peak boating season, 2011 use averages around 230 boats per day (commercial rafts and private use) with peaks of about 330 boats per day (Whittaker and Shelby 2012). Changes in both the kinds and amounts of use in various sections of the river corridor can be expected as a result of implementing any of the action alternatives. Under Alternatives 4, 5 and 6, private boating is allowed in West Valley on the section of river extending west of Sentinel Beach to either Cathedral Beach (Alt. 4) or Pohono Bridge (Alts. 5 and 6). Under all alternatives, commercial boating continues to be prohibited in West Valley and is not expanded beyond the current use area in East Valley. The length of river open for private boating is increased in East Valley under Alternatives 4, 5 and 6, all of which open the reach from Clarks Bridge to Stoneman Bridge to this use.

Overall, boating activity is expected to decrease in Alternatives 2, 3, and 4, remain close to 2011 levels in Alternative 5 (increased capacity for private use offsets reductions in commercial use) and increase in Alternative 6 (increased capacities for both commercial and private use). See "Alternatives" (Chapter 8) for a discussion of specific boating opportunities for each alternative and Appendix R for a more detailed discussion of current capacities and a general discussion of the amount of boating activity expected in various river reaches under the preferred alternative. The appendix also includes maps of all boating reaches which can be used to identify the open areas described above. As shown in Table 6-10, the resulting boating densities for all alternatives are expected to be within the associated management standards for the Recreational ORV.

Administrative Use Capacity. All administrative use within the Yosemite Valley segments is located in East Valley, with the exception of the Yellow Pines campground which is used by park volunteers. Overnight administrative use includes all Valley-based concessioner employees and NPS employees, the latter which must reside in the Valley as a condition of employment. While NPS housing is located outside of the river corridor, the individuals associated with it must be included in user capacity calculations to fully account for the maximum number of people who may be present at any time in East Valley. Administrative day use in East Valley also includes NPS and concessioner employee-commuters, service and maintenance employees, medical professionals, delivery drivers and other similar personnel required to provide for the needs of resident and visitor populations. All action alternatives reduce the current capacity for administrative use in

East Valley by either employing fewer people to run concessioner services, relocating employee housing out of the Valley, or both.

Relationship of User Capacities to River Values and the Recreation Experience

The ORVs identified for Segments 2A and 2B do not differentiate between segments, as most river values are the same throughout this 12-mile length of river corridor. Therefore, for purposes of managing user capacity and monitoring the condition of river values, indicators and standards have been set to account for a representative set of conditions in each segment. The intent is to ensure the protection of river values as intact systems and to distribute visitor use appropriately throughout the corridor to meet the management standards identified in Chapter 5. Thus, the remaining discussion will refer to the two segments jointly as Segment 2 and, unless otherwise specified, will pertain to the entire length of the corridor from the top of Nevada Fall to the junction of El Portal Road and Big Oak Flat Road.

River values most directly affected by the *amount* of use allowed in Segment 2 include meadows and riparian communities (ORV 2) and river-related recreation (ORV 20). The following sections explain why the user capacities established for the Merced River Plan are consistent with the protection and enhancement of these ORVs. Although Segment 2 also contains Geologic/Hydrologic, Scenic, and Cultural ORVs, the few concerns identified for these ORVs are not directly related to the amount of use allowed in the river corridor. They are best protected and enhanced by the appropriate design and placement of infrastructure, targeted restoration of historic structures, and vegetation management to maintain scenic viewpoints. These actions are included in plan alternatives and described in more detail in Chapters 5 and 8 and Appendix E.

User Capacity and the Biological ORV. As explained in Chapter 5 (ORV 2), the Largest Patch Index Five (LPI_5) measures meadow fragmentation and is intended to represent a host of potential impacts to Valley meadows, including impaired meadow hydrology, soil moisture, non-native species, habitat quality, and barriers to small mammals. The management standard, shown in Table 6-6 and described in more detail in Chapter 5, is held constant across all alternatives. Current conditions do not meet the management standard, primarily due to the high degree of social trailing in El Capitan meadow. This situation is addressed in all action alternatives by immediate implementation of corrective measures, including removing social trails and establishing unified access points and formal trails to manage access to and use of El Capitan, Cook's, and Sentinel Meadows.

TABLE 6-6: MANAGEMENT STANDARDS FOR THE BIOLOGICAL ORV IN SEGMENT 2[a]

Alternatives	1 (Current Condition)	2	3	4	5 (Preferred)	6
Indicator	**Standard**					
Meadow Fragmentation Index – % of meadow in 5 largest patches	Weighted mean LPI_5 = 88.65%, 3 meadows < 90%	Weighted mean LPI_5 of > 93%, with no meadow < 90%				
Status of Riparian Habitat -- % of sites scored at high rating	20%	At least 20%				
Status of Riparian Habitat -- % of sites scored at moderate or high ratings	80%	At least 90%	At least 80%			

NOTE:

[a] See Chapter 5 for more information about the selection of indicators and the development of applicable standards for all ORVs.

These actions have had demonstrated success. For example, in 1987, Stoneman Meadow was in such poor condition that it met the definition of a degraded meadow (LPI_5 <40%). Subsequently, the NPS removed and restored numerous social trails and established a single formal pathway with a boardwalk surface across the meadow. Over the next twenty years, the index improved to 99 percent (full restoration).

The indicator for riparian habitat conditions is the California Rapid Assessment Method (CRAM) score. Early application of this methodology to the Merced River corridor shows that poorer site conditions are generally associated with areas in the vicinity of campgrounds and lodging. Riparian area recovery is also slower when informal trails are allowed to proliferate between areas of concentrated visitor use and the river.

To address these observations, new construction is prohibited within150 feet of the river's ordinary high water mark and the alternatives further reduce development in proximity to the river to varying degrees (by removing campsites, lodging units, and other facilities). These setbacks are intended to help prevent future impacts to riparian conditions in Segment 2. Specific management actions have also been included in all action alternatives to direct river users to areas that are most resilient to recreation activity. Such actions include identifying and establishing formal river access points and strategically placing fencing near sensitive areas to guide visitors to locations that can handle more concentrated use without generating resource impacts. All action alternatives employ these visitor use management techniques to varying degrees.

Table 6-7 includes a summary of the type and extent of improvements (e.g. boardwalks, trails, and split-rail fencing) required to accommodate the user capacities proposed under the different alternatives. The design and placement of these structural improvements will reduce existing impacts and prevent new ones while allowing for continued public use and enjoyment of the river and its immediate environs.

Because all alternatives prohibit actions that would encroach upon meadow habitat (such as adding or expanding roadways), and because they include mitigation measures that directly respond to the observed effects of visitor use on meadows and riparian areas, the user capacities proposed for all action alternatives are consistent with the protection and enhancement of the Biological ORV in Segment 2.

User Capacity and the Recreational ORV: Setting Standards. As explained in Chapter 5 (ORV 20), visitor densities at key attraction sites are the indicator for the condition of the Recreational ORV in Segment 2. Providing a quality recreation experience requires managers not only to understand the impact of use on natural and cultural resources, but to understand and manage for quality social conditions. This requires an understanding of the level of social interaction that visitors find to be acceptable as they engage in river-related recreational activities or gather at scenic viewpoints. Once these perceptions are known, visitor use can be managed to prevent the concentrations of use that equate to the negative experiences of congestion and crowding.

Past visitor surveys have identified crowding on trails and popular attractions as being the conditions that detract most from a visit to Yosemite Valley. Several researchers identified periodic crowding problems at individual locations in Yosemite Valley during the peak summer season (cf. Gramann 1992; Littlejohn et al. 2005; Manning, et al. 1998 and 1999; Lawson et al 2008, 2009; Whittaker and Shelby 2012). Further research has clarified the linkages between vehicles entering the Valley, visitor densities at specific locations, and the quality of the visitor experience (DeGroot and Meldrum 2012, Lawson 2013). These relationships have been explicitly considered in the development of user capacities for all action alternatives in the *Final Merced River Plan/EIS,* and a brief summary of this work is provided below. Additional detail can be found in Chapter 5 and Appendix S.

TABLE 6-7: COMPARISON OF STRUCTURAL IMPROVEMENTS TO MANAGE VISITOR USE

Alternatives	1 (No Action)	2	3	4	5 (Preferred)	6
Fencing to protect sensitive meadow and riparian areas (ft)	33,750	33,750	33,750	51,515	51,515	55,130
Meadows requiring boardwalks or other protective measures (linear feet to be addressed)	Stoneman	Leidig (1000') Stoneman (275') Sentinel (150')	Leidig (1000') Stoneman (275') Sentinel (150')	Ahwahnee (350') Leidig (1000') Stoneman (275') Sentinel (150') El Capitan (1,400')	Ahwahnee (350') Leidig (1000') Slaughterhouse (300') Sentinel (150') El Capitan (1,400')	Ahwahnee (350') Leidig (1000') Slaughterhouse (300') Sentinel (150') El Capitan (1,400')
Trails rerouted/removed (meadows)	N/A	El Capitan Cooks Ahwahnee Bridalveil Slaughterhouse	El Capitan Cooks Ahwahnee Bridalveil Slaughterhouse	El Capitan Cooks Ahwahnee Bridalveil Slaughterhouse Pack-stock trail	El Capitan Cooks Ahwahnee Bridalveil Slaughterhouse Pack-stock trail	El Capitan Cooks Ahwahnee Bridalveil Slaughterhouse Pack-stock trail
Informal trails removed (miles)	0	6	6	6	6	6
Redirect shore users/boaters (locations)	N/A			• Upper Pines CG • Upper/Lower Rivers CG • Backpackers CG, Lower Pines CG and • North Pines CG • Housekeeping Camp and Yosemite Lodge beach access • Housekeeping Camp		
Redirect river access along riverbanks (locations)	N/A			• Swinging Bridge, Sentinel Beach, Devil's Elbow and Cathedral Beach Picnic Areas • Riverside access points from Pohono Bridge to El Cap Road/Big Oak Flat Intersection • Along Valley Loop Trail		
Remove roadside parking (Sentinel Drive, Northside Drive (west of bank 3-way), Superintendent's Straight and other locations)	N/A	-483 spaces	-474 spaces	-570 spaces	-460 spaces	-460 spaces

As discussed in Chapter 5, the number of people or boats at one time in each photo was then translated into densities (people per square foot or linear foot) based on the area included in the picture. For high-use trail segments, falls viewing areas, and beaches with defined boundaries, densities are reported as square feet per person. Boating densities are reported as boats per 500 linear feet in a given stretch of river (reach).
Table 6-8 provides a summary of the research findings for *some* of the locations to be monitored in this plan to assess the quality of the Recreational ORV and recreation experience in Yosemite Valley. Data is reported here for the areas of concentrated use that have been the focus of most social science research conducted in the Valley.

TABLE 6-8: VISITOR EVALUATIONS OF ACCEPTABLE AND DISPLACEMENT DENSITIES AT KEY LOCATIONS

Location	Photo Area	Photo Simulation Results People/Boats at One Time		Density Equivalent Square Feet per Person	
		Acceptable	Displacement	Acceptable	Displacement
Yosemite Falls Viewing Platform	1,225 ft^2	61 PAOT	94 PAOT	20	13
Bridalveil Fall	390 ft^2	20 PAOT	28 PAOT	20	14
Vernal Fall Trail	860 ft^2	26 PAOT	40 PAOT	33	22
High-Use Beaches	4,800 ft^2	48 PAOT	80 PAOT	100	60
Stoneman Bridge to Sentinel Beach-River Reach	500 ft	14 BAOT	22 BAOT	N/A	N/A

NOTE: These standards for social condition were adapted from peer-reviewed literature (Manning et al. 1999; Whittaker and Shelby 2012; Lawson et al. 2008; Manning and Lawson 2003).

The framework for managing the Recreational ORV consists of setting standards for crowding (visitor density) at two different scales. The ***site-level standard*** represents the threshold for acceptable conditions at the scale of the recreation site, and the ***management standard*** represents acceptable conditions at a segment-wide scale. The locations to be monitored were selected to represent a variety of recreational settings, including both the higher-use areas in East Valley and less-frequented attractions in West Valley. Specific locations include the well-known attractions of Bridalveil Fall, Yosemite Falls, and the trail to Vernal Fall, as well as popular beaches in East and West Valley, two different boating reaches, and the averages of three low-use trails and three low-use beaches.

As shown in Table 6-8 and Table 6-10, and described in Chapter 5, the site-level standards for visitor density have been set at the level reported as "acceptable" for visitors surveyed at each high-use location. Professional judgment, guided by peer-reviewed academic research was used to develop *site -level* standards for places with lower use (such as those in West Valley) to ensure that these locations would retain their character across all of the alternatives. The standards have been set to explicitly acknowledge and maintain variation in the kinds and amounts of use occurring in the two Valley segments.

The site-level standards in Table 6-9 define the thresholds for acceptable conditions during peak times at some of the highest use locations in the Valley (e.g., Yosemite Falls, Bridalveil Fall, Vernal Fall, and popular beaches in East Valley). Off-peak periods and less-popular locations will provide lower density conditions and higher-quality experiences for visitors sensitive to crowding. In addition, when locations such as popular beaches approach capacity, there is often a similar site that is far less crowded (Whittaker & Shelby 2012).

As described in Chapter 5, the ***management*** standard (at the scale of the river segment) is that at least half of the monitored locations must meet their associated site-level standard for three consecutive years. An adverse impact would occur if all monitored locations were in violation of their site-level standards for three consecutive years. The Recreational ORV would be degraded when more than half the monitored locations were experiencing the level of crowding that visitors considered "displacement" for three consecutive years. As discussed below, the user capacities established for each alternative were designed to meet site-level standards and, by doing so, avoid adverse impact and degradation. Thus, managing to the proposed capacities is consistent with protection of the Recreational ORV.

TABLE 6-9: SITE-LEVEL STANDARDS FOR MONITORING LOCATIONS: YOSEMITE VALLEY RECREATIONAL ORV

Location	Unit of Measure	Site-Level Standard
Recreation Sites		
Yosemite Falls Viewing Platform	Square Feet Per Person	20
Bridalveil Fall Viewing Platform		20
Vernal Fall Trail		33
Housekeeping Beach (High-use)		100
Swinging Bridge Beach (High-use)		100
Average of Three Low-Use Beaches[a]		250
Average of Three Low-Use Hiking Trails[b]	People Per Hour	50
Boating		
Boats at One Time: Stoneman Bridge to Sentinel Beach (High-Use)	Boats Per 500 feet	14
Boats at One Time: Sentinel Beach to Pohono Bridge (Low-Use)		6

NOTES:

[a] Low-use beaches include, but are not limited to: Slaughterhouse Meadow (East of Devil's Elbow), El Cap Beach, and Superintendent's Beaches.

[b] Low-use trails include, but are not limited to: East Valley Loop Trail between the Chapel and LeConte Memorial, West Valley Loop trail east of Slaughterhouse Meadow, and the West Valley Loop Trail east of Bridalveil Meadow.

User Capacity and the Recreational ORV: Managing to Standards. Research findings regarding visitor use patterns in Yosemite Valley were used to ensure that the proposed user capacities were consistent with the site-level standards discussed above and protective of the Recreational ORV (Lawson, et al., 2008; Lawson 2013). A complex model of visitor behavior was developed to mimic patterns of use at the locations for which visitor surveys had been conducted. The model was developed from observed patterns of use at each location which included counting the number of people arriving at the site from all connected trails, the amount of time spent on the trails leading to the attraction sites, and time spent on the viewing platforms (or other area of measurement). Once these relationships were established, the model could be used to translate trail counts into visitor densities for the same areas surveyed in 1998 and 1999 (Manning, et al.). Thus, the connection between numbers of people arriving on any trail leading to Yosemite Falls (for example) and crowding on the Yosemite Falls viewing platform was established.

The resulting model allows the NPS to estimate visitor densities at attraction sites using readily-available trail counter data. Should visitor densities at a particular site trend toward violating a management standard, the model will inform the degree to which trail access needs to be reduced to correct the situation. This directly responds to the requirement in the Guidelines that "public use should be regulated and distributed where necessary to protect and enhance…resource values of the river area."[7] This step provides the information needed to better distribute visitor use spatially and temporally to address crowding at select locations.

Table 6-10 displays the current (2010/2011) visitor use densities for all of the Recreational ORV monitoring sites. Also included are projected site densities for the alternatives based on the associated user capacities. For sites with the highest concentration of visitor use (Yosemite Falls, Bridalveil Fall, and Vernal Fall), the projections were derived from the simulation model described above. Linking user capacities to site arrivals at these locations required the following steps. First, regression analysis was used to quantify the relationship between traffic counter data collected in East Valley and trail counter data collected at each site under current conditions. Next, the user capacity for each alternative was translated into the corresponding traffic volume and the regression equation from the previous step was used to project trail counts for each

[7] Secretarial Guidelines at 39459

site. Finally, the simulation model was used to translate the projected trail counts into the expected visitor densities for the areas to be monitored. The projected visitor densities show that site-level standards for crowding at each site will be met under all alternatives, with the exception of Bridalveil Fall. All alternatives result in crowding-related concerns at Bridalveil and all action alternatives address this problem by proposing a comprehensive site plan to better distribute use at this location.

Visitor densities at high-use beaches (Housekeeping and Swinging Bridge) are also projected to be at or below the site-level standard for all action alternatives. As shown in Table 6-10, densities at high-use beaches are currently well below the levels reported as being "acceptable" (100 square feet/person) in a recent survey of recreationists at these locations (Whittaker and Shelby 2012). None of the action alternatives propose actions to further concentrate use at beaches already receiving high levels of use. Moreover, several actions have been included in the alternatives to guide visitors to more resilient river access points and better distribute use relative to current conditions. The monitoring program described in Chapter 5 will ensure that corrective measures are taken, should conditions trend toward higher use levels in the future.

Use levels for low-use sites (beaches and trails) are inherently difficult to project with a high degree of confidence, because recreational activity at these locations can be highly varied. Sites of this nature are included in the monitoring program to ensure that changes in use at primary destinations do not fundamentally change the character of the recreation opportunities in West Valley. With the exception of Alternative 6, the action alternatives do not propose any additional parking or other infrastructure in this area of the Valley. Visitor use is expected to remain at or slightly above the levels currently observed for these locations across all alternatives. As described in Chapter 5, periodic monitoring will be conducted to validate this assumption.

In addition, the boating limits proposed for each alternative have been analyzed to determine whether the number of boats allowed on the river will exceed the site level standard. For example, under the preferred alternative, up to 50 boats at one time (BAOT) would be allowed for rent and an additional 110 BAOT are expected from private use. This would equate to a total of 160 BAOT on the river or about 9 boats per 500 feet. This is slightly above 2011 observed levels (8 BAOT) but still well below the site-level standard of 14 BAOT, which visitors found to be acceptable in survey research (Whittaker and Shelby 2012). Estimates of boating densities for each alternative are shown below (Table 6-10).

In conclusion, the user capacities established for each alternative were designed to meet site-level standards and, by doing so, avoid adverse impact and degradation. Thus, managing to the proposed capacities is consistent with protection of the Recreational ORV.

Transportation System Performance and the Recreational Experience

Currently, visitors to the Merced River in Yosemite Valley continue to report a relatively high level of overall satisfaction. According to the most recent visitor survey, most visitor groups (98%) rated the overall quality of facilities, services, and recreational opportunities at Yosemite National Park as "very good" or "good" (University of Idaho, 2013). An efficient transportation system is needed to continue to provide a quality recreation experience and to facilitate the public use and enjoyment of all river values.

TABLE 6-10: CURRENT/PROJECTED VISITOR USE DENSITIES FOR MONITORING LOCATIONS: YOSEMITE VALLEY

Alternatives		Current Condition	Site-Level Standard	2	3	4	5 (Preferred)	6
Location	**Units**			**Projected Visitor Use Densities**				
Yosemite Fall Viewing Platform	Ft^2 Per Person	35	20	Not[b] modeled	48	Not modeled	33	29
Bridalveil Fall Viewing Platform[a]		11	20	Not modeled	17*	Not modeled	11*	10*
Vernal Fall Trail		80	33	Not modeled	112	Not modeled	76	69
Housekeeping Beach		300	100	Alts 4,5 & 6 provide additional camping in the vicinity of this beach. Use levels may increase as a result.				
Swinging Bridge Beach		525	100	Access is limited by the size of the parking area.				
Average of Low-Use Beaches (3 locations)		1500	250	No alternatives propose additional infrastructure to promote access to low-use beaches.				
Average of Low-Use Hiking Trails (3 locations)	People Per Hour	21	25	Alt 6 provides parking and drive-in campground in West Valley, providing additional access points to lesser used trails in the immediate vicinity of these facilities.				
Boating -- Stoneman Bridge to Sentinel Beach	Boats per 500 feet	6	14	1	2	8	9	12[c]
Boating – Cathedral Beach to Pohono Bridge		0	6	No boating allowed			2	5

NOTES:

* Denotes standard exceeded at the site-level

[a] Alternative estimates for Bridalveil Fall viewing platform assume the current infrastructure at this site. As a re-design of this site is called for in this plan, densities will be re-calculated when this site is re-designed.

[b] Alternatives 3, 5, and 6 were modeled for projected densities assuming current use patterns as they represent the lowest use, preferred, and highest use alternatives respectively.

[c] Alt 6 allows more boating on this reach (nearly double current peak use). Assuming use patterns similar to current conditions, this could equate to 12 boats per 500 feet; approaching but not exceeding the site-level standard.

Public access to the river corridor is reduced when traffic becomes congested and, in extreme cases, traffic congestion can diminish the quality of the visitor experience (White and Aquino 2008; Lawson et al. 2009). Traffic management has challenged the park's infrastructure and operational staff more frequently in recent years (DEA 2012). Although representative of only a subset of visitors, a 2011 study of river users in Yosemite Valley indicated that they felt more crowded while using the park's transportation system than when participating in other activities in the river corridor (Whittaker and Shelby 2012).

Transportation models were developed to diagnose problems within the existing system and to determine a range of options for addressing them. The models showed that under current conditions, traffic congestion at peak times is caused by constricted roadways (particularly the two-way segment from Yosemite Lodge to Yosemite Village), vehicles slowed or stopped in search of parking spaces, and by poorly designed intersections and pedestrian crossings. Throughout the course of the day, as more vehicles enter the Valley, these impediments to free-flow begin to exponentially increase travel times, queue lengths, and vehicles per viewscape.

User capacities and transportation solutions were developed in tandem to address these problems. First, traffic models were developed and tested to explore the relationship between circulation and infrastructure improvements (such as pedestrian underpasses/overpasses, intersection improvements, and parking supply). Each action alternative was then evaluated by transportation planners to determine whether the kinds and amounts of use proposed were consistent with the goal of improving traffic circulation (DEA 2012). Adjustments and refinements were made to use levels and infrastructure to generate a variety of solutions. Ultimately, transportation modeling helped to define the level of parking and infrastructure

improvement needed to adequately accommodate the user capacities proposed for each alternative. Explicitly incorporating transportation planning into the alternative development process ensures that the quality of the recreation experience will be enhanced under each alternative. See the section entitled "Visitor Day-Use Parking and Transit" and the conceptual site drawings for each alternative in Chapter 8 for the actions proposed to improve traffic flow and public access.

User Capacity Management

As noted above, user capacities for the *Final Merced River Plan/EIS* are reported as the **number of people at one time** (PAOT) within the river corridor. The following section focuses on how the NPS will ensure that the PAOT in the Yosemite Valley segments remains within the capacity calculations for each alternative. This goal will be attained by monitoring and managing the different forms of transportation to and from Yosemite Valley, including access by regional transit, tour bus, parking lot shuttle, and private vehicle. The way in which the NPS will manage each form of access is described below and the linkage between the user capacities reported earlier (Table 6-4) and the means of transport is illustrated in Table 6-11.

Regional Transit and Remote Parking Lot Shuttle. Each alternative includes assumptions about the number of transit runs that can access the Valley each day and the number of riders transported. The potential for increased public transportation to the park has been incorporated into these calculations. Operational efficiencies and transit schedules will effectively serve to distribute use temporally. Thus, managing this component of user capacity simply requires periodic confirmation of these planning assumptions. The same applies to shuttle passengers from the El Portal remote parking lot in Alternatives 5 and 6. No further management action is needed to ensure that the user capacity associated with regional transit and shuttles is accounted for and within projected use levels.

Tour Bus. Tour buses are managed by providing a limited number of parking spaces and requiring bus operators to park in these specific locations. Monitoring and directing tour bus operations to the space allocated for their use will ensure that this component of user capacity remains stable and within plan projections. Capacity calculations have accounted for all tour buses to be carrying full passenger loads.

Private Vehicle. The primary form of transportation to the Valley is the private vehicle, and NPS must manage the number of vehicles entering Yosemite Valley as part of managing user capacity. After accounting for the number of individuals who arrive via transit or commercial tour bus, the remaining capacity is translated to private vehicle numbers, assuming a given number of individuals per vehicle, depending on user type. For example, vehicle occupancy for day users is estimated at 2.9 people per vehicle, while it is assumed that campers will travel in larger groups. Table 6-11 reports the resulting VAOT by alternative for each Valley segment. By monitoring vehicle accumulation in the Valley, the NPS can ensure that the number of people at one time in the river corridor remains within the established user capacity. The following sections describe the approach the NPS will use to manage private vehicle access to Yosemite Valley.

East Valley User Capacity Management. The design of the road system in Yosemite Valley provides an excellent location for managing the number of visitors in the East Valley. The El Capitan Traffic Diversion (Figure 6-2) has been used by park staff for many years to mitigate and control traffic congestion during times of peak visitation. The crossover near El Capitan is ideally located for this purpose because access roads from all park entries join Southside Drive prior to reaching this location. Therefore, all in-bound vehicles must pass through this location and can be redirected to out-bound traffic lanes at this point, prior to reaching East Valley. Under all action alternatives, data regarding traffic accumulations will be collected

TABLE 6-11: USER CAPACITY MANAGEMENT

Alternative	1 (No Action)	2	3	4	5 (Preferred)	6
Regional Transit/Shuttles						
Number of Bus/Shuttle Runs	12	11	11	15	30	34
Associated PAOT	267	241	241	337	684	788
Tour Buses						
Buses Parked at One Time in East Valley	15	15	15	15	22	15
Associated PAOT	720	720	720	720	1,056	720
Private Vehicle Segment 2A: East Valley						
Vehicles at One Time (VAOT)	6,300	4,040	4,290	4,700	5,300	5,360
Associated PAOT	17,599	10,348	10,500	13,804	15,631	15,947
Private Vehicle Segment 2B: West Valley						
Vehicles at One Time (VAOT)	540	500	520	520	520	600
Associated PAOT	1,374	1,261	1,339	1,339	1,339	2,465
Total User Capacity (PAOT)	**19,960**	**12,570**	**12,800**	**16,200**	**18,710**	**19,920**

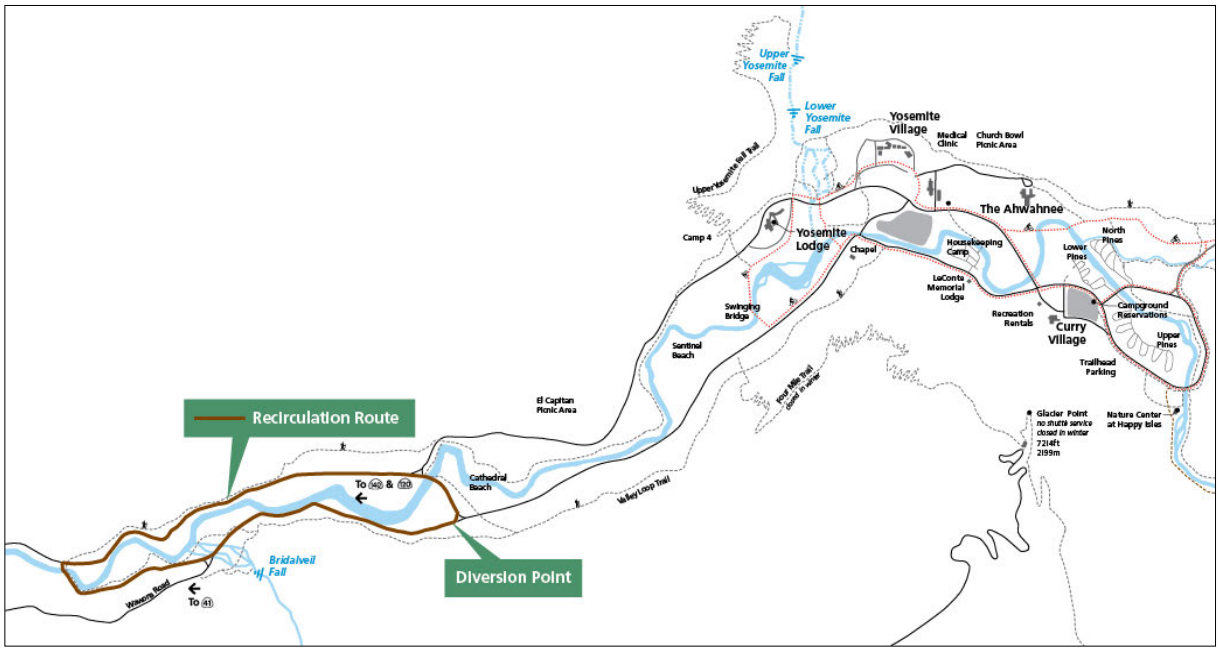
NOTE: Both regional transit and commercial tour bus capacities have been allocated to Segment 2A (East Valley) as all tour buses are required to use designated parking in that segment and all transit drop-off and pick-up locations are located there. These components of the transportation system are common to all alternatives.

by automated traffic counters and reported in real time to park managers. When a specified VAOT is approached, park staff will begin re-routing traffic from Valley destinations until conditions improve. The El Capitan Traffic Diversion is the primary tool for managing the VAOT in the East Valley for Alternatives 5 and 6.

Alternatives 2, 3, and 4 propose a day use parking reservation system in addition to the traffic diversion. Such a system offers visitors the opportunity to reserve a guaranteed parking space in advance of their visit and will allow visitors who make reservations to avoid the prospect of being diverted away from East Valley. The form and content of the reservation system would be developed using a public process and would likely require several rounds of testing and modification before full implementation.

West Valley User Capacity Management. All of the above approaches to managing user capacity for Yosemite Valley rely upon the El Capitan Traffic Diversion to some degree. Because the diversion point is located in West Valley, technically, the system only manages vehicle numbers in the portion of West Valley that lies to the east of the crossover. However, none of the plan alternatives contemplate significant increases in use or promote access to the remainder of West Valley, with the exception of the day-use parking and camping provided in Alternative 6. Thus, user capacities for West Valley (Segment 2B) will be passively managed via the provision of limited parking and access for visitors and designated parking for employees and residents. For Alternative 6, the user capacity for West Valley has set higher to reflect the additional new development (a campground and parking), and those will be designed and managed to keep use within the established higher capacity.

Figure 6-2: El Capitan Cross-over Traffic Diversion



Interim Capacity Management. The Merced River Plan is a long-range planning document. Some of the management actions that are adopted by this Plan will require significant refinements to the transportation system and the development of additional transit options. These changes will be accomplished via staged implementation of plan components over the next 15-20 years. For example, in some alternatives a roundabout is constructed to facilitate traffic flow and improve the recreational experience. Additionally, three alternatives feature a remote parking lot to be built in El Portal that will eventually reduce traffic volumes in East Valley. Adjustments to the user capacity program will be necessary to respond to infrastructure improvements as they are completed.

Until transit options are expanded and remote parking is provided, a greater proportion of visitors in Alternatives 5 and 6 can be expected to arrive in East Valley by private vehicle. Therefore, the vehicle numbers reported in Table 6-11 are representative of post-plan implementation levels. In the interim, the NPS will implement the El Capitan crossover to maintain use levels within established capacities and adjust vehicle numbers over time, as alternatives to private vehicle access are developed.

Before transportation system modifications are completed, occasional traffic delays may occur during peak periods of visitation. However, gradual improvement to the recreational experience can be expected over time and will stem from the implementation of key aspects of the plan. In this interim period, the NPS may employ additional temporary measures in order to protect the quality of the recreational experience as required by WSRA and NPS policy.

Segment 3 (Scenic): Merced Gorge

Management Goals and Constraints

The three management goals related to user capacity in this segment include: protecting natural processes, promoting visitor enjoyment, and reducing crowding and congestion.

Resource constraints. The primary constraint to the kinds and amounts of use that can occur in the Merced Gorge segment is the location of the Highway 140 corridor (El Portal Road), which parallels the Merced River. There is limited space on either side of the road to provide visitor services outside of restrooms, garbage bins, and parking. Most road traffic passes through Segment 3 en route to other destinations within or outside Yosemite. Two-way traffic volumes along this road have not created noticeable congestion during peak-use periods, with the exception of periodic back-ups at the Arch Rock Entrance Station.

Relationship of User Capacity to River Values and the Recreational Experience

Scenic Views in the Merced River Gorge (ORV 17) have improved since the river was designated, with the removal of the Cascades Diversion Dam and associated features in 2004. No new infrastructure is proposed under any alternative that would compromise the scenic quality of this river segment.

Recreation use in this area is primarily transient. However, some visitors engage in longer visits that include more immersive recreational activities (climbing, swimming, or fishing, for example). For example, the pull-outs near Arch Rock, Cookie Cliff, and Ribbon Falls are popular for climbing. From the western Yosemite boundary to the former diversion dam, most roadside pull-outs in Segment 3 have been redeveloped and properly designed to reduce impacts to river values. A few popular swimming-related pull-outs, however, show parking and bank trampling impacts. The *Final Merced River Plan/EIS* proposes actions that would provide appropriate access, restore trampled vegetation, reduce erosion, and protect riverbanks, thereby enhancing the recreation experience in this segment. All action alternatives also provide for a minimal level of private boating to occur within the segment—a use that is currently prohibited (see Chapter 8 for details).

Overview of User Capacities

A summary of the user capacities for the Merced Gorge Segment is provided in Table 6-12. The only overnight use occurring in this segment is housing for the Arch Rock entrance station employees.

Parking availability in Segment 3 is very limited and remains constant under all alternatives. This limits the number of people who can spend extended time in this river segment. With regard to roadway capacities, current peak use averages 300 vehicles per hour traveling the El Portal road through the Gorge. Traffic volumes could nearly double without causing unacceptable congestion (DEA 2012).

Visitor day-use capacities assume 90 percent occupancy of available parking and 2.9 people per vehicle. A further assumption is that transit and tour buses do not stop at turn-outs (transit does not stop due to schedule constraints and tour buses are prohibited from stopping). Roadway capacity was calculated assuming no traffic congestion and 20 vehicles per mile for a distance of 6.9 miles. Roadway capacities include both visitor and administrative use. Administrative capacities refer to NPS employees using day-use parking at the Arch Rock entrance gate or residing there. Nine employee beds exist along with two administrative parking spaces.

TABLE 6-12: SUMMARY OF USER CAPACITIES BY ALTERNATIVE: MERCED GORGE (SEGMENT 3)

Alternatives	1 (No Action)	2	3	4	5 (Preferred)	6
Note: All capacities reported as People At One Time (PAOT)						
Visitor Day-Use Capacity Segment 3: Merced Gorge						
Parking	470	470				
Roadway	399	399				
Total	**869**	**869**				
Administrative Use Capacity Segment 3: Merced Gorge						
Employee Housing	9	9				
Administrative Day-Use	4	4				
Total	**13**	**13**				
TOTAL USER CAPACITY MERCED GORGE (rounded to nearest 10 PAOT)	**880**	**880**				

The *Final Merced River Plan /EIS* proposed no changes to the current user capacity for Segment 3 under any of the action alternatives.

User Capacity Management

Capacity is passively managed with the provision of limited parking spaces and access points. Existing Segment 3 parking capacity will limit visitor use. For all action alternatives, the relatively slight increase in traffic volume associated with additional commuters to the Valley is well within the existing roadway capacity.

Segment 4 (Recreational): El Portal

Management Goals and Constraints

The three management goals related to user capacity in this segment include: protecting natural processes, promoting visitor enjoyment, and reducing crowding and congestion. A further goal of providing for NPS administrative services is not directly associated with this plan, but must be recognized in planning for this river segment.

Resource constraints and site suitability. To protect resources and financial investments, plans must address both natural hazards and high-valued natural and cultural resources. For Segment 4, these include: floodplains, scenic riverside views, and cultural resource sites. Development opportunities are also limited by the steep topography in proximity to the river, which greatly increases construction costs. After factoring in all of these constraints, very limited space remains in El Portal for the placement of NPS administrative services and visitor-related infrastructure. The alternatives propose options for working within these constraints, primarily in the amount and location of employee housing to be provided.

El Portal Administrative Site Designation. The El Portal Administrative Site was authorized by Congress in 1958 (PL 85-9222) to provide administrative functions for the NPS outside of Yosemite Valley. Priorities for the El Portal site were to augment the supply of employee housing and to relocate industrial and administrative park functions outside of the Valley. Housing construction began in the Rancheria Flat area

as a part of the Mission 66 initiative (Carr 2007). The El Portal Administrative Site (Segment 4) currently includes the primary wastewater treatment plant, maintenance personnel and equipment, offices for other park personnel, and employee housing for NPS, concessioner and park partners.

Public Health and Safety. The El Portal Wastewater Treatment Plan services both El Portal and Yosemite Valley. This plant currently processes one million gallons of wastewater per day, well under its capacity. Although plant capacity is not a constraint, the presence of the facility is essential and prohibits alternative lands uses at the same location.

Relationship of User Capacity to River Values and the Recreational Experience

The two river values in Segment 4 are not currently affected by visitor use, nor are they sensitive to use levels. Informal trails, non-essential roads, and abandoned infrastructure are proposed to be removed under all alternatives to enhance the condition of the El Portal Archeological District (ORV 11). The boulder bar in El Portal (ORV 7) is impervious to the kinds and amounts of use proposed under all alternatives.

In El Portal, the recreation experience is primarily scenic driving, but some visitors make short stops at turn-outs or longer stops to swim or fish (especially during low water periods in mid- to late summer). Although boating in this segment is currently allowed, some of the action alternatives impose daily use limits for this activity (see Chapter 8 for additional details).

Transportation models developed for this planning effort were used to evaluate the ease of access to scenic viewing and recreation opportunities and parking availability and congestion at turn-outs and parking areas. The models indicate that the El Portal Road capacity in Segment 4 is currently underutilized and that vehicle traffic could nearly double without causing unacceptable traffic congestion (DEA 2012). None of the action alternatives propose this level of growth and the quality of the recreation experience in Segment 4 is expected to remain high.

Overview of User Capacities

A summary of Segment 4 user capacities by alternative is provided in Table 6-13.

Because most visitors pass through this segment on their way to the Arch Rock Entrance station, visitor day-use capacities are based on roadside parking availability and roadway capacity under free-flowing conditions. Segment 4 contains approximately 214 visitor parking spaces, depending on the size of vehicles and how efficiently they are able to park in informal turn-outs. Day-use capacities are based on the assumption that parking is utilized at 90 percent, with vehicle occupancy averaging 2.9 people per car. Roadway capacity was calculated assuming no traffic congestion and 20 vehicles per mile for a distance of 3.1-miles. Roadway capacities include both visitor and administrative use.

For administrative use, overnight capacities assume full occupancy of all existing and proposed housing. Administrative day-use capacity is estimated based on the number of employee parking spaces at the NPS administrative and maintenance facility and assumes an average of two employees per vehicle

With the exception of Alternative 5, no action alternatives propose changes to the visitor use capacities in Segment 4. Alternative 5 increases visitor overnight use capacity by providing a public campground at the El Portal Trailer Village. The alternatives propose a range of administrative capacities related to the construction of varying amounts of employee housing at Rancheria Flat, Old El Portal Village Center, and Abbieville.

TABLE 6-13: SUMMARY OF USER CAPACITIES BY ALTERNATIVE: EL PORTAL (SEGMENT 4)

Alternatives	1 (No Action)	2	3	4	5 (Preferred)	6
Note: All capacities reported as People at One Time (PAOT)						
Visitor Capacity (day use and overnight)						
Parking	559	559*				
Roadway	181	181				
Sub-Total	740	740				
Campground	0	0			240	0
Total Visitor Capacity	740	740			980	740
Administrative capacity						
Employee housing	427	801	406	483	535	689
Administrative day-use parking	1,220	1,220				
TOTAL SEGMENT CAPACITY (rounded to nearest 10 PAOT)	**2,390**	**2,760**	**2,340**	**2,440**	**2,740**	**2,650**

NOTE:
*Alternatives 4, 5, and 6 include a remote parking lot in Segment 4 for visitors wishing to access Yosemite Valley by shuttle. This component of user capacity has been captured in the capacity calculations for Valley segments and is not repeated here.

User Capacity Management

User capacity will continue to be passively managed in this segment via the provision of limited parking and access for visitors and designated parking for employees and residents. The slight increase in camping proposed in Alternative 5, will be managed to the design capacity. Appropriate river access points will be identified during site planning for the Abbieville and El Portal Trailer Village areas to direct visitor and resident use in proximity to the river. Existing Segment 4 roadside parking capacity will limit visitor use in other parts of this river segment. For all action alternatives, the relatively slight increase (between 25 and 160 additional vehicles) in daily traffic volume associated with additional commuters to the Valley is well within the existing roadway capacity. Additionally, most commuting traffic is on the roadway before and after the busiest times for visitor traffic.

Segment 5 (Wild): South Fork Merced River Above Wawona

Management Goals and Constraints

The two management goals related to user capacity in this segment include: protecting natural processes and promoting visitor enjoyment.

Wilderness designation. Segment 5 is entirely located in designated Wilderness. The provisions of the 1964 Wilderness Act direct that these areas be managed to provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation." Therefore, both the kinds and amounts of use allowed in this segment are limited to those consistent with Wilderness designation. Visitor use in the corridor is primarily associated with maintained trails that cross the river in three places along with a few commonly used informal campsites.

Overview of User Capacities

The visitor use capacities reported in Table 6-14 include campers and day hikers. Administrative use capacity assumes up to five employees per day associated with Wilderness patrols, trail crews, or search-and-rescue operations. User capacities for Segment 5 are held constant across all alternatives.

TABLE 6-14: SUMMARY OF USER CAPACITIES FOR ALL ALTERNATIVES: S. FORK MERCED ABOVE WAWONA (SEGMENT 5)

		Rationale
Visitor Overnight Capacity Segment 5		
South Fork Zone	15	The trails to Chain Lakes and to Fernandez Pass both cross the river corridor (about 4.5 miles of trail in the corridor in total). Very little, if any cross-country use occurs in this area and the river corridor accounts for less than 15 percent of the area within the zone. Most camping occurs outside of the river corridor.
Johnson Creek Zone	5	There are no designated trails in the river corridor. Very little cross-country travel occurs in this area and the river corridor accounts for less than 5 percent of the area within the zone.
Chilnualna Creek Zone	0	There are no designated trails in the river corridor and no known use. The river corridor accounts for less than 10 percent of the area within the zone. No camping is allowed in the river corridor (within four miles of Wawona).
Total Visitor Overnight Capacity	**20**	
Visitor Day-Use Capacity Segment 5	**6**	Use in this segment is very low for day users. Capacity based on two groups of 3 persons each.
Administrative Use Capacity Segment 5	**1**	Estimated based on a limited number of Wilderness patrols.
Total User Capacity South Fork Merced Above Wawona	**27**	

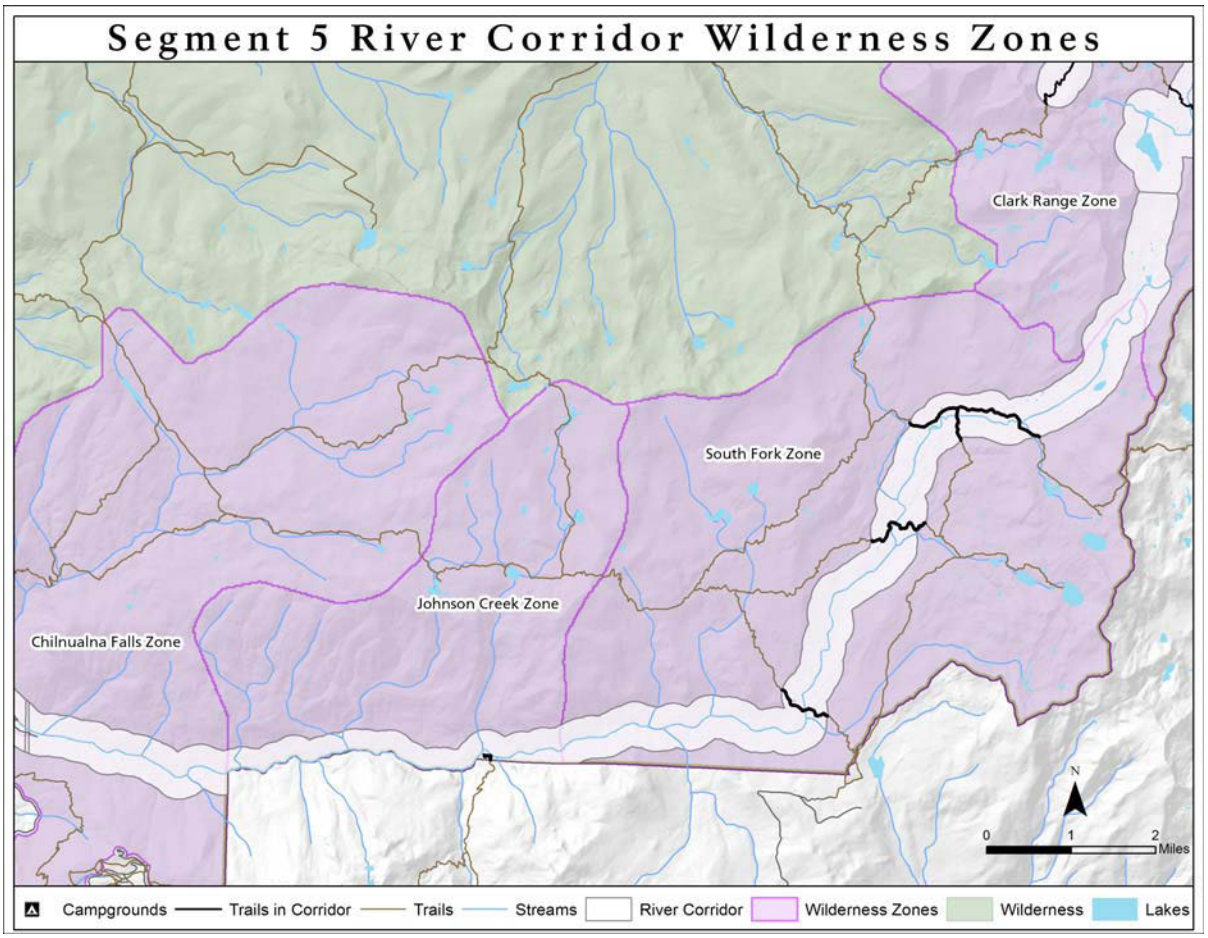
Relationship of User Capacity to River Values and the Recreation Experience

Segment 5 contains two ORVs. The exemplary and wild scenic beauty of the river corridor (ORV 18) will remain intact under all alternatives. The Wilderness designation associated with this segment precludes development or resource extraction, and its scenic vistas are not threatened by the amount of use proposed in any alternative.

The condition of the regionally rare archeological features (ORV 12) in Segment 5 currently meets the management standard described in Chapter 5, although known impacts to one of the sites will require management action. One archeological site is located approximately 10 meters from a hiking trail and has been impacted by inappropriate visitor use, including a bonfire and construction of campfire rings. This isolated conflict with visitor use is site-specific and more related to management of use at the site level versus the management of overall segment capacity. All plan alternatives highlight this location for further monitoring and prescribe appropriate protection actions to be taken in response to site conditions. Currently, boating in this segment is not allowed; however, under all action alternatives some level of boating would be allowed in this segment (See Chapter 8 for additional details by Alternative).

This part of the Merced River corridor currently provides very low-density, solitude-oriented recreation experiences and minimal visitor-related impacts. The action alternatives propose no changes that would change or otherwise diminish the quality of the recreation experience provided in this river segment.

Figure 6-3: Segment 5 River Corridor and Wilderness Zones



User Capacity Management

Visitor overnight use for Segment 5 is managed through the Wilderness permit system. Other details about the backcountry permit system are provided earlier in this chapter (see discussion for Segment 1). Active management of visitor day use is not proposed because use has historically been very low and confined to maintained trails which pass through only 4.5 miles of the river segment.

Segments 6 and 7 (Recreational) Wawona Impoundment and Wawona

Management Goals and Constraints

The two management goals related to user capacity in the 4.6 mile Wawona segment include: protecting natural processes and promoting visitor enjoyment. The .05-mile Wawona Impoundment segment meets the goal of providing a domestic water supply for NPS operations and private use in Wawona. If alternative sources of water were to be developed, the segment would be merged with Segment 7.

Resource constraints and site suitability: In Segments 6 and 7, the floodplain and the location of cultural resources are the primary constraints on the location of visitor and administrative services. The checkerboard ownership of federal and privately-owned parcels within Section 35 (entirely within the boundaries of the river corridor) limits the size and placement of facilities to those that fit within the available space and provide for compatible land use.

Water consumption: The NPS water treatment plant, located off Chilnualna Falls Road in Wawona, processes untreated water from a shallow impoundment on the South Fork Merced (Segment 6). Water availability serves as a limiting factor for further development in this river segment. To protect aquatic habitat, mandatory water conservation measures are implemented when the flow of South Fork Merced River drops below six cubic feet per second. This has become an annual event in recent years.

Because of its short length and limited opportunities for visitor use, Segment 6 is not discussed further in this section. User capacity for Segment 7 will include any incidental use that may spill over into Segment 6.

Overview of User Capacities

Table 6-15 reports the proposed user capacities for the federal land within Segment 7 for all alternatives. In general, slight increases in day-use are offset by reductions in overnight use across alternatives.

As previously discussed, Segment 7 includes an area with numerous residential inholdings (Section 35). Many other rivers include private lands within the boundaries of the designated river area. In all cases, management restrictions, including user capacity decisions, apply only to federal lands.[8] As with other gateway communities, Wawona residents are included as day and/or overnight users of park facilities throughout the corridor.

TABLE 6-15: SUMMARY OF USER CAPACITIES BY ALTERNATIVE: WAWONA (SEGMENT 7)

Alternatives	1 (No Action)	2	3	4	5 (Preferred)	6
Note: All capacities reported as People At One Time (PAOT)						
Visitor Overnight Capacity Segment 7: Wawona						
Campgrounds	618	426	456	456	540	540
Lodging	247	247				
Total	**865**	**673**	**703**	**703**	**787**	**787**
Visitor Day-Use Capacity Segment 7: Wawona						
Private Vehicle	911	911				
Regional Transit	0	26	26	104	311	311
Commercial Tour Bus	384	384				
Total	**1295**	**1,321**	**1,321**	**1,399**	**1,606**	**1,606**
Administrative-Use Capacity Segment 7: Wawona						
Employee Housing	121	121				
Administrative Day-Use	60	60				
Total	**181**	**181**				
TOTAL USER CAPACITY WAWONA	**2,340**	**2,170**	**2,200**	**2,280**	**2,570**	**2,570**

[8] Development and use on private land is guided by the Wawona Town Planning Areas Specific Plan, a component of the Mariposa County General Plan.

Visitor Overnight Capacity

Visitor overnight capacity in Wawona is limited to accommodations at the Wawona Hotel, Wawona Campground, and two camping areas for equestrian users. Variation in the visitor overnight capacity for the action alternatives can be attributed to the number of campsites removed from the Wawona Campground.

Visitor Day-Use Capacity

Day use in Wawona includes a variety of river-related activities (including fishing, swimming, boating), as well as non-river related activities (including picnicking, camping, lodging, horseback riding, and golfing). Additionally, the Pioneer History Museum, special events at the Wawona Hotel, and other attractions near the Wawona store attract visitors to this park destination. Most of these activities are expected to continue under all action alternatives. Currently, boating in this segment is allowed; however, under some action alternatives, daily use limits for boating would be established in this segment (See Chapter 8 for additional details by Alternative).

For all action alternatives, increased transit on the Highway 41 corridor between Fresno/Oakhurst and Yosemite Valley (see Segment 2A/2B discussion) is assumed to translate into more day-use in Wawona. To ensure that capacity calculations account for these transit riders, it is assumed that a maximum of 60 percent of total bus ridership on this corridor could remain in the Wawona area at any one point in time.

No additional parking or visitor services are proposed in any alternative, although improvements to existing facilities are included as actions common to all. Day use capacity associated with private vehicles and tour buses will remain limited by the amount of parking provided. All alternatives retain approximately 290 parking spaces for private vehicles and eight parking spaces for tour buses at the Wawona Store. Space for private vehicles is approximate because vehicle size varies and spaces are not delineated within turnouts. Transportation models were used to estimate the number of vehicles at one time in circulation on the Wawona road during free-flowing traffic conditions. Vehicle occupants are included in total day-use calculations.

The Wawona golf course provides a unique visitor use in the Wawona segment. Roughly 20 acres of the nine-hole course are within the river corridor. It is retained under Alternatives 4, 5, and 6, and removed under Alternatives 2 and 3. The presence or absence of the golf course does not change any of the user capacities proposed for this segment. The capacity of the golf course is limited by the course size and layout, and no changes to the operations of the course are proposed under the alternatives that retain it.

Administrative Capacity

Administrative overnight-use capacity assumes full occupancy of the housing currently provided for a limited number of NPS and concessioner employees. Administrative day-use includes NPS rangers, fire personnel and maintenance staff, and concessioner employees working at the Wawona Hotel, store, and golf course. Administrative day-use capacity is assumed to be limited to the level that can be accommodated by the available administrative parking supply (30 spaces). No additional housing or administrative uses are proposed under any of the action alternatives.

Relationship of User Capacity to River Values and the Recreation Experience

Segment 7 contains three ORVs. The condition of Sierra sweet bay population (ORV 3) meets the management standard described in Chapter 5. Visitor use related impacts include minor, localized trampling associated with recreational access near the Wawona Campground. All action alternatives propose permanent photo points to monitor the status of the population in the vicinity of the campground. The results will be used to determine whether and how visitor use in this area can best be directed to avoid future impacts.

The condition of the Wawona Archeological District (ORV 13) currently meets the management standard described in Chapter 5. However, the concentration of visitor use in proximity to the Camp A. E. Wood archeological site increases the potential for damage to shallow deposits of historic artifacts. All action alternatives propose removing seven campsites in the Wawona campground to address this concern.

There are no visitor use related impacts to the Wawona Historical District (ORV 14) in Segment 7.

As in the other Merced River segments, water quality is excellent in Segment 7. However, the Wawona campground currently relies upon a limited septic system and leach field for wastewater treatment. To alleviate concerns over the potential for mound failure, all action alternatives propose connecting the campground to the main sewer line servicing the Wawona community.

Visitor overnight capacity is reduced in all action alternatives. However, there are numerous private rentals in close proximity that provide the opportunity for an overnight experience in the river corridor. Other actions common to all alternatives, including improvements to river access points and popular picnic areas, will enhance the quality of the recreation experience in this segment.

User Capacity Management

User capacity will continue to be passively managed in this segment via the provision of limited parking for visitor-use and designated parking for employees and residents. Appropriate river access points will be designated and restroom facilities provided for areas of concentrated use. Current use-related impacts to river values are minimal and will be addressed by all action alternatives. No other actions are required at this time.

Segment 8 (Wild): South Fork Merced River Below Wawona

Management Goals and Constraints

Segment 8 is the shortest segment of the Merced Wild and Scenic River (with the exception of the Wawona impoundment). The two management goals related to user capacity in this 2.7 mile segment include: protecting natural processes and promoting visitor enjoyment.

Policy and regulation. Camping is prohibited within one air mile of any road in Yosemite. Thus, camping is prohibited in Segment 8 because, although difficult to access, the entire segment is located within one mile of the Wawona Road.

Overview of User Capacities

Segment 8 is rarely visited. Recreational activity is typically low-impact and dispersed. For example, visitors at the Wawona campground may hike along the river to fish or swim. Similarly, a few highly-skilled whitewater boating groups (typically kayakers) may descend the Class V+ South Fork during a narrow window of boatable flows in early summer. Currently, boating in this segment is allowed; however, under some action alternatives, daily use limits for boating would be established in this segment (See Chapter 8 for additional details by Alternative). A few visitors each year may hike further into the river corridor seeking places to fish or relax in near-complete solitude, but the reach is short, and the terrain is steep and challenging with no trails.

Although Segment 8 is not within designated Wilderness, management of the area would continue to focus on primitive and low-density recreation opportunities, consistent with the Wild classification under WSRA. User capacities for Segment 8 are intended to provide a measure of solitude, similar to areas without trails in the South Fork Merced River above Wawona (Segment 5). Research pertaining to low-density Wilderness use suggests that encounter rates should be lower than five per day to provide a similar experience in this segment of the river corridor (Vaske et al. 1986). Along the South Fork below Wawona, use levels of three or fewer groups per day (of no more than 5 people per group) are expected to be consistent with this standard. Based on NPS estimates, this low level of use has rarely, if ever, been exceeded. This is the basis for the day-use capacities (which include both hikers and boaters) reported in Table 6-16.

Administrative use capacity assumes up to five employees per day associated with Wilderness patrols and search-and-rescue operations.

No overnight use occurs in this river segment.

User capacities for Segment 8 are held constant across all alternatives.

TABLE 6-16: SUMMARY OF USER CAPACITIES FOR ALL ALTERNATIVES: S. FORK MERCED BELOW WAWONA (SEGMENT 8)

		Rationale
Visitor Day-Use Capacity Segment 8	**6**	Use in this segment is very low for day users. Capacity based on two group of 3 persons each at one time.
Administrative Use Capacity Segment 8	**1**	Estimated based on a limited number of Wilderness patrols.
TOTAL USER CAPACITY SOUTH FORK MERCED ABOVE WAWONA	**7**	

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7. DEVELOPMENT OF LANDS AND FACILITIES

The Wild and Scenic Rivers Act (WSRA) requires that management plans prepared for rivers designated under the act will address "development of lands and facilities" in the river area.[1] The WSRA and the *1982 Final Revised Guidelines for Eligibility, Classification, and Management of River Areas Secretarial Guidelines* (Secretarial Guidelines) provide direction on the types of facilities that may be located within river areas. In addition, the Ninth Circuit's 2008 opinion in *Friends of Yosemite Valley v. Kempthorne* questioned whether the level of development in some parts of the river corridor was sufficiently protective of ORVs.[2]

This chapter addresses the development of lands and facilities in the river corridor, including the rationale for locating major public-use facilities within each segment. This chapter first discusses the legal requirements governing such development. It then reports the results of the NPS's analysis of all major public-use facilities in the Merced River corridor. The content of this chapter informed the level of development proposed in the alternatives described in "Alternatives" (Chapter 8), including the actions that are common to Alternatives 2-6.

LEGAL REQUIREMENTS GOVERNING DEVELOPMENT AND FACILITIES

WSRA, the Secretarial Guidelines, and judicial opinions interpreting the law all play a role in determining the permissibility of the level and type of development in the Merced Wild and Scenic River corridor. Guidance from WSRA and the Secretarial Guidelines pertains primarily to segment classifications and related amounts of development, with the Secretarial Guidelines providing additional direction for major public use facilities. Judicial opinions (mainly pertaining to previous versions of the Merced River Plan in Yosemite) have emphasized the importance of this task and clarified the direction from WSRA and the Secretarial Guidelines.

Segment Classifications and Facilities

WSRA provides important guidance on the type and intensity of development that is allowable in river segments, depending upon the segment's classification.[3] The Act and the Secretarial Guidelines describe development that may exist in river areas in terms of a continuum, with the least amount of development tolerated in wild segments. "Wild" segments are to be managed as "vestiges of primitive America," containing little or no evidence of human activity, although a few inconspicuous structures may be present. These areas generally do not contain roads and are free of impoundments. "Scenic" river segments may contain more discernible development. A scenic segment retains its overall natural character but may have structures or concentrations of structures in short reaches of the total area. Scenic segments may be accessible in places by roads. Finally, "recreational" segments, such as East Yosemite Valley, are defined as being readily accessible by road and may have roads paralleling the river on one or both banks as well as bridge crossings. Recreational segments may also have some residential, commercial or similar development, and may have evidence of impoundment or diversion.[4]

The Secretarial Guidelines provide that the classification for each segment is one that best fits the existing level of development at the time of designation. Although each classification permits certain nonconforming existing

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1 16 U.S.C § 1274(d).
2 *Friends of Yosemite Valley v. Kempthorne*, 520 *F.3d* 1024, 1035-36 n.5 (9th Cir. 2008) [hereinafter *FYVIII*].
3 16 U.S.C. Section 1273(b).
4 47 *Fed. Reg.* 39457-58.

development, "the criteria do not imply that additional inconsistent development is permitted in the future."[5] Accordingly, segment classifications affected the level of new development proposed in particular segments in this Plan. For example, Segment 2B, West Yosemite Valley, is classified "Scenic." Therefore, large-scale residential and commercial development is not proposed within this segment.

Limits on Major Public-use facilities

In addition to limiting development based on segment classification, the Secretarial Guidelines contain additional criteria for facilities located in the corridor. Facilities are divided into two categories: **major public-use facilities** and **basic facilities**. The Secretarial Guidelines state that "major public-use facilities such as developed campgrounds, major visitor centers and administrative headquarters will, where feasible, be located outside the river area. If such facilities are necessary to provide for public use and/or to protect the river resource, and location outside the river area is infeasible, such facilities may be located within the river area provided they do not have an adverse effect on the values for which the river area was designated."[6]

Other facilities, such as picnic areas, public restrooms, roadside pull-outs, shuttle bus stops, and campground kiosks, are denominated "basic facilities" by the Secretarial Guidelines. Basic facilities may be located in river areas because they help to absorb the impacts from use and protect the river. Finally, the Secretarial Guidelines also make allowance for structures related to resource management, such as trail bridges, fences and other minor structures as long as they are compatible with the segment's classification and the structures harmonize with the surrounding environment.[7] Most segments of the Merced Wild and Scenic River contain basic facilities and minor structures.

Judicial Opinions

Previous versions of the Merced River Plan were the subject of litigation over the level of development and visitor use in the corridor.[8] The most recent Ninth Circuit ruling was issued in 2008 in *Friends of Yosemite Valley v. Kempthorne*, and addressed the issue of "past degradation" in Yosemite Valley. The Court explained that the NPS could not presume that facility levels in existence in 1987 were protective of river values. Pointing to "dozens of facilities and services operating in the river corridor," the court stated that the many recreational and commercial facilities located in the corridor were evidence of "past degradation" of the Merced, and held that NPS must "explain how maintaining these facilities inside the corridor would protect and enhance the river's unique values as required under the WSRA, giving primary emphasis to the river's esthetic, scenic, historic, archeologic, and scientific features."[9] This means that every facility must be evaluated to ensure it is consistent with the protection of river values regardless of whether it was present in the corridor at the time the Merced was designated as a Wild and Scenic River.

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5 47 *Fed. Reg.* at 39456-57.See also "Wild and Scenic River Management Responsibilities," IWSRCC, pp. 4-6 (2002); "A Compendium of Questions and Answers Relating to Wild and Scenic Rivers," IWSRCC, p. 31 (2011).

6 47 *Fed. Reg.* at 39459.

7 47 *Fed. Reg.* 39459.

8 *FYVIII*, 530 *F.3d* 1024 (9th Cir. 2008); *Friends of Yosemite Valley v. Norton*, 366 *F.3d* 731 (9th Cir. 2004) [hereinafter *FYVII*]; *Friends of Yosemite Valley v. Norton*, 348 *F.3d* 789 (9th Cir. 2003) [hereinafter *FYVI*]; *Friends of Yosemite Valley v. Scarlett*, 439 F.*Supp.2d* 1074 (E.D. Cal. 2006).

9 *FYVIII*, at 1035-36.

PROCESS USED TO EVALUATE PUBLIC-USE FACILITIES IN THIS PLAN

The Merced River corridor within Yosemite National Park and the El Portal Administrative Site contains major public-use facilities for purposes such as resource protection; camping and lodging; food, retail, and other commercial services; administration; and utility infrastructure. In order to comply with the legal requirements described above, the NPS evaluated all existing and proposed major public-use facilities pursuant to the direction in WSRA, the Secretarial Guidelines, and judicial opinions. NPS utilized a rigorous three-step process that determined: (1) whether it would be feasible to relocate the facility outside the river corridor; (2) if the facility would be infeasible to relocate, whether it is necessary for public use and/or resource protection; and (3) if the facility is both infeasible to relocate and necessary for public use or resource protection, whether it could be maintained without adverse impacts to river values.

Feasibility

"Feasible" is defined in this plan as "capable of being done, accomplished, or carried out; possible, practicable."[10] In making a determination as to whether or not a facility could feasibly be relocated out of the river corridor, the NPS considered a variety of constraints, including economic and technical issues in addition to resource and safety hazards.

Necessary for Public Use or Resource Protection

There are no universal criteria for what is "necessary" that can be applied to all of the diverse areas that comprise the National Wild and Scenic River System. Rather, what is necessary must be determined for each Wild and Scenic River area with reference to the particular resource and other concerns specific to that area. Because the Merced Wild and Scenic River is located in Yosemite National Park, determinations of the kinds of facilities that are necessary for public use were informed by the National Park Service's *Management Policies 2006*, and by the 1980 *General Management Plan* for Yosemite National park (GMP), in addition to WSRA.

NPS Management Policies 2006

Management Policies 2006 interprets the National Park Service Organic Act, which contains the agency's well-known dual mandate: "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."[11] The NPS *Management Policies 2006* provide guidance on the development of facilities to support appropriate visitor use activities and administrative needs. For example, it directs that major facilities should be located outside park units where feasible. However, it also recognizes that many facilities, including overnight visitor use facilities and food services, may need to be provided inside parks when travel distance to similar facilities outside the park is too great to permit reasonable use or when having to leave the park would substantially detract from the quality of the visitor experience.[12]

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[10] This is the definition from the *Oxford English Dictionary*, Online Edition (2013). Other dictionary definitions are similar, e.g., *Merriam-Webster.com.* Merriam-Webster, n.d. Web. 29 July 2013. <http://www.merriam-webster.com/dictionary/feasible>. The Oxford Dictionary (ODO) defines "feasible" as "possible to do easily or conveniently." http://oxforddictionaries.com/us/definition/american_english/feasible.

[11] 16 *U.S. Code* 1-1a-1; see also NPS *Management Policies 2006*, Section 1.4.3, page 21.

[12] NPS *Management Policies 2006*, Section 9.3.2, page 136.

The Management Policies specify that each unit within the National Park Service is required to have a general management plan which serves as "the basic foundation for decision-making" within the park. A park's general management plan is required by law to address the question of facilities and development, and NPS policy provides that decisions regarding facility planning must be consistent with an approved park general management plan.[13]

1980 General Management Plan For Yosemite National Park

The 1980 *General Management Plan* for Yosemite National Park (GMP) establishes direction for facility development within the park. It includes five broad goals for the park: reclaim priceless beauty, allow natural process to prevail, promote visitor understanding and enjoyment, markedly reduce traffic congestion, and reduce crowding.[14] As discussed in Appendix A, these five goals remain valid and helped to inform decisions in the Merced River Plan.

To achieve these goals, the GMP specified that many facilities would be removed from Yosemite Valley to reduce crowding and protect natural beauty and resources. Visitor facilities and commercial services that had become "intrusive" were to be reduced or relocated. The GMP established a desired level of development as one in which visitors would "step into Yosemite and find nature uncluttered by the piecemeal stumbling blocks of commercialism, machines, and fragments of suburbia."[15] The GMP described the park's ultimate goal for visitor experience as one that would reduce "congested" conditions caused by "more than 1000 stores, homes, garages, lodging facilities, and restaurants" and refocus on assisting park visitors to grasp, appreciate, and participate in the park's conservation mission.

The 1980 *General Management Plan* for Yosemite National Park was completed before either the Yosemite Wilderness or the Merced River were designated; it therefore does not consider protection and enhancement of river values in accordance with WSRA. Consistent with the NPS *Management Policies 2006*, the *Final Merced River Plan/EIS* will revise the GMP to include those considerations. The specific amendments to the GMP resulting from this plan are outlined in Appendix A.

The Merced River Plan exhibits a high degree of consistency with the facility and development decisions of the GMP. For example, the Concessioner General Office and Garage and the Ahwahnee Tennis Courts are all removed from the corridor in both plans. The GMP, like the Merced River Plan, reduced gift shop space in the Lodge and Village areas. The Curry Village Ice Rink is removed from its permanent location in both plans. Both plans pull campsite development back from the river, and both the GMP and the Merced River Plan remove units from Housekeeping Camp in order to protect river values. In addition, both the preferred alternative for the Merced River Plan and the GMP retain many facilities including park campgrounds, the Yosemite Lodge, Housekeeping Camp, Curry Village, the Ahwahnee Hotel; the Ahwahnee and Lodge swimming pools, the historic Wawona hotel complex including its swimming pool and golf course, and many other major public-use facilities.

The *Final Merced River Plan/EIS* will revise the 1980 *General Management Plan* for Yosemite National Park regarding some public use facilities based on new information regarding the designation of the Merced Wild and Scenic River in 1987 and the Yosemite Wilderness in 1984, new information regarding resource conditions and natural hazards, changes in visitor use patterns, and new information that rendered some GMP actions as

[13] 16 U.S.C. Section 1(a)-7(b) (2013); NPS Management Policies 2006, Section 9.1.1, page 124; NPS Management Policies 2006, Section 2.2, page 22-23; NPS GMP Dynamic Sourcebook, Version 2.2, http://planning.nps.gov/GMPSourcebook/Purpose_new.htm# (last accessed 7/29/13).
[14] NPS, Yosemite *General Management Plan*, p.1-4 (1980) [hereinafter "GMP"].
[15] GMP, pp. 1-3.

impractical and infeasible.[16] More information on each of these causes of difference follows.

Changed Legal Environment

The evolving legal environment since 1980 affected some of the facilities decisions in the GMP. In some instances, the 1987 designation of the Merced Wild and Scenic River itself required adjustments to the 1980 GMP to protect and enhance river values and reduce the number of major public-use facilities in the corridor as required by law. For instance, the GMP retained the old Wells Fargo Bank building and repurposed it for visitor use.[17] That facility now houses an art activity center and an ATM that feasibly could be relocated outside the river corridor. The old bank building could then be removed to allow for the redesign and partial restoration of the Camp 6 day use parking lot, which will protect and enhance biologic river values. In another example, the GMP called for removing Degnan's Deli and its associated food and snack service, while retaining the Happy Isles food and snack stand. However, that decision predated the designation of the Merced, which placed the Happy Isles establishment within the river area. For that reason, the Merced River Plan retains Degnan's and eliminates the Happy Isles stand instead. Table 7-2 lists those facilities within the corridor that the GMP proposed to remove but that the Merced River Plan retains, along with the reason for the decision; Table 7-3 provides similar information on facilities that the GMP proposed retaining, but which this plan removes.

Natural Hazards

Natural events and new knowledge regarding natural hazards required a reconsideration of certain GMP facilities decisions. For example, in 1997 a significant flood event occurred in Yosemite Valley that required the removal of some development from the floodplain, including some campground areas and lodging that were too close to the river. Rock-fall events over the past decade have prompted the closure of other areas to development to protect visitor safety. Natural hazards not only limited the area available for development inside the corridor, but also reduced the area outside the corridor that is available for relocation of facilities.

New Information about Visitor Use, Land Availability, and Fiscal Constraints

New information about patterns of visitor use, land availability, and fiscal constraints also resulted in some changes to the GMP. One factor considered by NPS in making the determination of whether a facility is "necessary" for public use is its utilization rate and the cost/benefit trade-off based on that rate of utilization. For example, commercial horseback day-rides in Yosemite Valley have a very low rate of usage. Fewer than 150 such rides per day were provided during the period of June 1 through August 31, 2012, compared with an average daily park-wide visitation during that period of nearly 20,000 people.[18] The stable facility in Yosemite Valley, which employs 45 full time seasonal workers who are housed in the corridor, maintains substantial overcapacity relative to the demand for this service. The land allocation within the corridor for the stables operation is disproportionately large given the declining number of users. This low rate of usage suggests that the facility can be reduced in size because the entire facility is not necessary. Similarly, the Ahwahnee tennis courts are obsolete and are no longer used by visitors. As a result, this facility is no longer necessary for public use. In this way, the Merced River Plan follows the direction of the GMP to "phase out other facilities and activities that are not directly related to resource enjoyment or that exceed visitor demand."[19]

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16 See Appendix A for a complete description of all amendments to the GMP made by the Merced River Plan.
17 GMP, p. 35, CSP, p. 26.
18 National Park Service, Visitor Use Statistics, Yosemite National Park (2012) available at: https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Visitation%20By%20Month%20Year?Park=YOSE.
19 GMP, p. 36.

New information also led to a decision to amend the GMP provision that would have eliminated all private automobile travel in Yosemite Valley. Following an extensive public process, NPS determined that this specific decision is not feasible due to a number of factors including the lack of sufficient land for remote parking, fiscal constraints, and the lack of sufficient regional transit capacity. However, the MRP observes the GMP direction to markedly reduce traffic congestion by making other facilities decisions, including redesigning the transportation system and consolidating and delineating parking.

In sum, while some of the details of the GMP and the Merced River Plan decisions regarding major public use facilities may differ, the overarching direction of Yosemite's *General Management Plan*—to reduce the development footprint, limit commercial facilities, reduce traffic congestion, and refocus on protecting and enhancing natural and cultural resources—is wholly consistent with and reflected in Merced River Plan determinations of which major public use facilities are "necessary" in the Merced River corridor. Specific amendments to the 1980 *General Management Plan* for Yosemite National Park proposed by the *Final Merced River Plan/EIS* are found in Appendix A.

Adverse Impacts

Under the Secretarial Guidelines and the 2008 Ninth Circuit opinion interpreting them, facilities that are necessary for public use and/or resource protection and infeasible to relocate may be maintained in the corridor provided that they have no adverse impact on river values. The analysis of the impacts of major public-use facilities on river values is based on the baseline conditions for river values and the management concerns and localized concerns described in "River Values and Their Management" (Chapter 5). As shown in Chapter 5, there are no segment-wide adverse impacts to any river values. There may, however, be management concerns or localized concerns affecting a river value related to a major public use facility. Table 7-1 provides a summary of all facility-related management concerns and localized concerns, along with the necessary mitigation measures to protect river values.

RESULTS: NECESSARY FACILITIES FOR THE MERCED RIVER CORRIDOR

Table 7-1 presents an analysis of all public-use facilities within the corridor to meet the intent of the Secretarial Guidelines. The analysis includes all facilities in the river corridor that do not meet the definition of "basic" under WSRA. Those facilities that were found to be either feasible to relocate or unnecessary for public use or resource protection are either eliminated or relocated across all action alternatives.

displays the treatment of major public-use facilities that are either removed or relocated across all alternatives. For example, the Ahwahnee Tennis Courts are removed in all alternatives because they are obsolete and no longer necessary for visitor use.

In addition to those facilities found to be either feasible to relocate or unnecessary for public use or resource protection, some alternatives remove additional facilities. This is because a range of alternatives are being considered for managing the Merced River corridor, including a range of user capacities. Some alternatives propose reductions in visitor use and consequently have a lesser need for camping, lodging, food, retail outlets, administration, and employee housing. These alternatives consequently have fewer major public-use facilities. For example, Alternative 3 has a user capacity of 12,800 people at one time (PAOT). As a result of this reduced capacity, Housekeeping Camp as well as some of the lodging units from Curry Village and the Yosemite Lodge, and associated employee housing are removed in that alternative. Other alternatives eliminate some facilities in order to provide a differing mix of camping and lodging accommodations for overnight visitors. For example,

Alternative 2 eliminates Yosemite Lodge and replaces it with camping and day-use facilities. Table 7-4 presents a comparison of the actions taken with regard to facilities across the range of alternatives.

Relationship of this Analysis with other Chapters

Chapter 5: River Values and Their Management. Where it has been determined that development footprints, visitor use and / or administrative use are causing local effects to river values as defined in "River Values and Their Management" (Chapter 5), this plan calls for removal, re-design, and/or relocation of those facilities. The conclusions from this analysis of river value conditions with regard to existing and proposed facilities can be found in Table 7-1.

Chapter 6: User Capacity. Chapter 6 details the kinds and amounts of public use that will be allowed under each alternative in order to protect and enhance river values. As noted above, the facilities needed for public use and resource protection may vary depending on the user capacity proposed for any given alternative. Table 7-4 presents a comparison of major public-use facilities by alternative.

Chapter 8: Alternatives. The *Final Merced River Plan/EIS* contemplates a wide range of reasonable and feasible alternatives, which propose varied levels of major public-use facilities needed to provide for public use and enjoyment or protection of the river resource.

Chapter 9: Environmental Consequences. The environmental analysis of different alternatives varies depending upon the level and type of facilities provided. For example, Alternative 2 provides a greater amount of camping and reduces lodging units in Yosemite Valley. The economic impacts to gateway communities of providing fewer in-park lodging units are described under "Socioeconomics", while the environmental impacts of reducing the number of lodging units in the corridor are described under "Hydrology, Floodplains, and Water Quality".

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TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT[20]

SEGMENT 1: WILDERNESS ABOVE NEVADA FALL (WILD)								
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**		
						ORV 1	**ORV 15**	**ORV 19**
LODGING								
Merced Lake High Sierra Camp	Retained	**No.** The High Sierra Camp is located within potential Wilderness and is surrounded by designated Wilderness which precludes the construction of new facilities or the relocation of existing facilities outside the river corridor.	**Yes.** This camp was authorized by Congress to continue as a non-conforming use in potential Wilderness. It provides rustic lodging to visitors traveling independently or as a part of the organized High Sierra Loop Trips offered by the concessioner.	NONE	NONE	*Informal trails incise meadow habitat in the vicinity.* All alternatives would remove informal trails.	NONE	NONE

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
LODGING										
Housekeeping Camp	Retained at reduced capacity	**No.** It is infeasible to locate Housekeeping Camp outside of the river corridor in Yosemite Valley because alternative locations would either directly impact river values or put visitors in harm's way from rock fall.	**Yes.** Housekeeping Camp, with its primitive accommodations, facilitates the public use and enjoyment of all river values. Overnight accommodations allow visitors to have the experience of being in a natural setting over the course of a day, experiencing the changing light conditions at dusk and ultimately, the nighttime sky. Support services such as the laundry, showers and grocery store are located on site to provide basic necessities at this key visitor services node. Consistent with the GMP, all action alternatives reduce capacity.	NONE	**ORV 2: Biological and ORV 6: Geological/Hydrological Processes** – Riverbank erosion in the corridor is in excess of 200 meters. Erosion in the proximity of Housekeeping Camp is contributing to this situation.	*Localized riverbank erosion in the vicinity of Housekeeping Camp is negatively affecting streambank stability.* Alternatives 2 and 3 remove Housekeeping Camp. Alternatives 4,5 and 6 will use brush layering and other re-vegetation techniques to repair eroded banks. Visitor use will be guided to more stable and resilient river access points such as sandy beaches and low-angle slopes. Fencing and signs will be installed to protect high use areas that exhibit vegetation loss and eroded soils. Re-vegetated areas will be protected with closure signs, fencing, and/or natural barriers such as rocks and logs.	*Some Housekeeping Camp units are located within the bed and banks of the river (i.e. below the ordinary high water mark).* All action alternatives remove these units to improve the hydrologic function of the river.	*Localized riverbank erosion in the vicinity of Housekeeping Camp is negatively affecting traditionally used plant populations.* Actions listed under ORV 2 will remedy this situation	*Localized riverbank erosion in the vicinity of Housekeeping Camp is negatively affecting the scenic quality of views from the river in the immediate vicinity.* Actions listed under ORV 2 will remedy this situation.	NONE
Curry Village	Retained at reduced capacity	**No.** It is infeasible to locate Curry Village outside of the river corridor in Yosemite Valley because alternative locations would either directly impact river values or put visitors in harm's way from rock fall.	**Yes.** Curry Village, with its rustic accommodations, facilitates the public use and enjoyment of all river values. Overnight accommodations allow visitors to have the experience of being in a natural setting over the course of a day, experiencing the changing light conditions at dusk and ultimately, the nighttime sky. Support facilities and services such as food service and groceries are located on site to provide basic necessities at this key visitor services node. In addition, Curry Village is an integral part of the Yosemite Valley Historic District. Consistent with the GMP, all action alternatives reduce capacity.	NONE	NONE	NONE	NONE	NONE	NONE	NONE

[20] GMP actions listed here include the amendments made by the 1992 Concession Services Plan for commercial services

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
LODGING (cont.)										
The Ahwahnee Hotel and Cottages	Retained	**No.** It is infeasible to locate Ahwahnee Hotel outside of the river corridor in Yosemite Valley because alternative locations would either directly impact river values or put visitors in harm's way from rock fall. The Ahwahnee Hotel is also a National Historic Landmark and cannot be relocated outside the corridor without damage to its historic significance.	**Yes.** The Ahwahnee Hotel and Cottages facilitate the public use and enjoyment of all river values. Overnight accommodations allow visitors to have the experience of being in a natural setting over the course of a day, experiencing the changing light conditions at dusk and ultimately, the nighttime sky. Moreover, hard-sided facilities allow wintertime enjoyment of river values. Guests and visitors to the Ahwahnee also gain a better understanding and appreciation of Yosemite Valley's history.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Overnight Accommodations	Retained with services at reduced capacity	**No.** While some buildings within the Yosemite Lodge complex could be relocated to sites north of Northside Drive, doing so would disconnect lodging from support services and further exacerbate pedestrian-vehicle conflicts in this area. It is infeasible to relocate the entire complex out of the river corridor because alternative locations would either directly impact river values or put visitors in harm's way from rock fall.	**Yes.** Yosemite Lodge, with its mid-scale accommodations, facilitates the public use and enjoyment of all river values. Overnight lodging allows visitors to have the experience of being in a natural setting over the course of a day, experiencing the changing light conditions at dusk and ultimately, the nighttime sky. Moreover, hard-sided facilities allow wintertime enjoyment of river values. Support facilities and services such as food service and groceries are located on site to provide basic necessities at this key visitor services node. Consistent with the GMP, all action alternatives reduce retail and selected services at this location.	NONE	NONE	*Localized riverbank erosion in the vicinity of the Yosemite Lodge beach access s is negatively affecting streambank stability.* All alternatives will use brush layering and other re-vegetation techniques to repair eroded banks. Visitor use will be guided to more stable and resilient river access points such as sandy beaches and low-angle slopes. Fencing and signs will be installed to protect high use areas that exhibit vegetation loss and eroded soils. Re-vegetated areas will be protected with closure signs, fencing, and/or natural barriers such as rocks and logs.	NONE	*Non-technical climbing on a large bedrock mortar is causing impacts to the archeological resource and affects traditional cultural values.* Natural features will be used to conceal and divert foot traffic around sites, and informal trails will be removed.	*Localized riverbank erosion in the vicinity of the Yosemite Lodge beach access is negatively affecting scenic views.* Actions taken under ORV 2 will remedy this situation.	NONE
CAMPGROUNDS										
Camp 4 Campground	Retained	**No.** It is infeasible to locate Camp 4 outside of the river corridor because alternative locations would either directly impact river values or put visitors in harm's way from rock fall.	**Yes.** Camp 4 is the only walk-in, first-come, first-served campground in the corridor. It is also the most affordable campground in the corridor, providing low-cost overnight accommodations that facilitate public use and enjoyment of all river values. Camp 4 is also listed on the National Historic Register in large part due to its location and prominence in the history of climbing	NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
CAMPGROUNDS (cont.)										
Upper Pines Campground **Lower Pines Campground** **North Pines Campground**	Retained	**No.** It is infeasible to locate campgrounds outside of the river corridor because alternative locations would either directly impact river values or put visitors in harm's way from rock fall. Camping outside of Yosemite Valley does not serve as a close substitute for the recreational experience the Valley provides.	**Yes.** Campgrounds provide low-cost overnight accommodations that facilitate public use and enjoyment of all river values. They also allow visitors to interact with river values directly and continuously into the late evening and nighttime hours.	NONE	**ORV 2: Biological and ORV 6: Geological/Hydrological Processes –** Riverbank erosion in the corridor is in excess of 200 meters. Erosion in the proximity of Upper Pines, Lower Pines, and North Pines Campgrounds is contributing to this situation.	*Localized riverbank erosion in the vicinity is negatively affecting riparian habitat.* All action alternatives remove campsites within 150 feet of the ordinary high water mark to reduce the likelihood of future impacts. In addition, all action alternatives will employ brush layering and other re-vegetation techniques to repair eroded banks. Visitor use will be guided to more stable and resilient river access points such as sandy beaches and low-angle slopes. Fencing and signs will be installed to protect high use areas that exhibit vegetation loss and eroded soils. Re-vegetated areas will be protected with closure signs, fencing, and/or natural barriers such as rocks and logs	NONE	*Camping and trampling are causing impacts to important archeological features, affecting traditional cultural values.* Natural features will be used to conceal and divert foot traffic around sites and informal trails will be removed.	*Localized riverbank erosion in the vicinity is negatively affecting scenic views.* Actions taken under ORV 2 will remedy this situation.	NONE
Upper River Walk-in and Group Campground (New – Alternatives 4, 5, and 6)	Retained and reduced by 15 sites	**No.** It is infeasible to locate additional camping outside of the river corridor because alternative locations would either directly impact river values or put visitors in harm's way from rock fall. Camping outside of Yosemite Valley does not serve as a close substitute for the recreational experience the Valley provides.	**Yes.** Campgrounds provide low-cost overnight accommodations that facilitate public use and enjoyment of all river values. They also allow visitors to interact with river values directly and continuously into the late evening and nighttime hours.	NONE	NONE	All new campsites will be located at least 150-feet away from the ordinary high water mark. Riverside areas of Backpackers and North Pines campgrounds will be restored to natural riparian conditions.	All campsites within new campgrounds will be located at least 150-feet away from the ordinary high water mark.	*Vehicular and bike traffic along a dirt access road in the vicinity of Backpackers Campground are affecting surface and subsurface archeological resources.* All new campgrounds will be designed and located to avoid or minimize effects to cultural resources.	New development or re-development in Yosemite Valley would be designed using design guidelines that promote harmony between the built and natural environments.	Additional camping will enhance the Recreational ORV in Yosemite Valley by allowing more people to enjoy spending a sustained amount of time in proximity to the river and its sounds and scenery.
Lower River Walk-in and Drive-in Campground (New – Alternatives 4, 5, and 6)	Retained and reduced by 36 sites									
Backpackers Campground (Relocated to the west – Alternatives 2, 3, 4, 5, and 6)	Not Addressed --									
Upper Pines Walk-in Campground (New – Alternatives 3, 4, 5, and 6)	Not Addressed -									
East of Camp 4 Campground (New – Alternatives 2, 3, 4, 5, and 6)	Not Addressed									
West of Lodge Campground (New – Alternatives 2 and 4)	Not Addressed									
Yellow Pine Volunteer Campground	Retained									

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
MAJOR RETAIL AND FOOD SERVICE FACILITIES										
Curry Village Pavilion and Food Service	Retained	**No.** Food service must be co-located adjacent to overnight accommodations and primary short-term parking lots.	**Yes.** This food service is necessary to support day visitors and those overnight visitors who are staying at lodging facilities without kitchenettes.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Curry Village Pizza Deck and Bar	Retain Fast Food (type not specified)	**No.** Food service must be co-located adjacent to overnight accommodations and short-term parking lots.	**Yes.** This food service is necessary to support day visitors and those overnight visitors who are staying at lodging facilities without kitchenettes.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Curry Village Grocery Store	Retain	**No.** The grocery store must remain proximate to lodging units and visitor services.	**Yes.** This grocery store provides a limited range of merchandise, including packaged and fresh groceries, sundries, and outdoor products that are frequently needed by visitors.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Village Store	Retained	**No.** The merchandise and food service offered for sale from this facility could not be relocated to other locations outside the river corridor in the Yosemite Village area.	**Yes.** This grocery and retail facility is needed to support day use visitors, park residents and overnight visitors. It offers a limited range of merchandise including packaged and fresh groceries, sundries, and outdoor products frequently needed by campers and hikers.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Village Sports Shop	Removed	**Yes.** The merchandise offered for sale from this facility could be relocated to other retail outlets offered in the Yosemite Village area, thereby allowing the facility to be repurposed for other visitor services.	**No.** The service offered is duplicative of other retail offerings in the Yosemite Village area, which serves as geographically distinct visitor service node in Yosemite Valley. However, the facility is necessary to provide visitor orientation associated with the redesigned parking areas.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Village Grill	Retained	**No.** Food service must be co-located adjacent to overnight accommodations and primary short-term parking lots.	**Yes.** This food service is necessary to support day visitors and those overnight visitors who are staying at lodging facilities without kitchenettes.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Mountain Room Bar/Restaurant	Retained	**No.** Food service must be co-located adjacent to overnight accommodations and primary short-term parking lots.	**Yes.** This food service is necessary to support day visitors and those overnight visitors who are staying at lodging facilities without kitchenettes.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Food Court	Retained			NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Gift and Grocery / Convenience Shop	Reduced and redesigned to include office and food service	**No.** Some of the retail merchandise offered for sale from this facility could be relocated to other retail outlets; however the grocery component must remain proximate to the visitor lodging units.	**Yes.** The facility provides visitors a limited range of merchandise including packaged and fresh groceries, sundries.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Nature Shop	One gift shop retained with clothing sales removed.	**Yes.** The merchandise offered for sale from this facility could be relocated to other retail outlets offered in the Yosemite Village area, thereby allowing the facility to be repurposed for other visitor services.	**No.** The service offered is duplicative of other retail offerings in Yosemite Valley.	NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
DAY-USE PARKING										
Curry Village Orchard Parking	Removed	**No.** Visitor parking must be immediately adjacent to overnight lodging accommodations.	**Yes.** This parking lot is needed to support day-use and overflow parking for east Yosemite Valley campgrounds.	NONE	NONE	*Visitor use in adjacent Stoneman Meadow leads to meadow fragmentation and trampling.* All alternatives restore denuded vegetation in Stoneman Meadow, protect re-vegetated areas with fencing or other natural barriers, install signs to prevent trampling, and develop or extend boardwalks to accommodate visitors and reduce meadow trampling.	NONE	NONE	NONE	NONE
Yosemite Village Day-use Parking Area (Camp 6)	Employee Housing Removed	**No.** No alternative areas of sufficient size or location are available outside the river corridor due to site constraints in Yosemite Valley (such as the floodplain and rockfall hazard zone).	**Yes.** This facility will serve as the primary day-use parking lot for Yosemite Valley because it is proximate to numerous visitor services including the primary visitor center, museum, and the Valley shuttle. A day-use visitor parking area of this size is needed to support the level of public use that has been found to protect and enhance river values.	NONE	**ORV 2: Biological** – The scale of impacts to riverbanks is greater than 200 meters of riverbank.	The preferred alternative would move the parking area 150 feet north of the ordinary high water mark and use best management practices to protect water quality.	NONE	NONE	NONE	NONE
West of Yosemite Lodge Day-use and Bus Parking Area (New – Alternatives 2, 3, 4, 5, and 6)	---	**No.** No alternative areas of sufficient size or location are available due to site constraints in Yosemite Valley (such as the floodplain and rockfall hazard zone).	**Yes.** This facility will serve as a critical day-use parking lot for Yosemite Valley because substantial numbers of roadside parking spaces adjacent to meadows will be removed in the vicinity of the Yosemite Village Day-use Parking Area. This new parking area will serve as trailhead parking for the upper and lower Yosemite Falls trail, and overflow evening parking for Camp 4 Campground. It will also be used for the Wahhoga Cultural Center.	NONE	NONE	*Localized riverbank erosion in the vicinity of the Yosemite Lodge beach access s is negatively affecting streambank stability.* All alternatives will use brush layering and other re-vegetation techniques to repair eroded banks. Visitor use will be guided to more stable and resilient river access points such as sandy beaches and low-angle slopes. Fencing and signs will be installed protect high use areas that exhibit vegetation loss and eroded soils. Re-vegetated areas will be protected with closure signs, fencing, and/or natural barriers such as rocks and logs.	NONE	*Localized riverbank erosion in the vicinity of Housekeeping Camp is negatively affecting traditionally used plant populations.* Actions listed under ORV 2 will remedy this situation.	*Localized riverbank erosion in the vicinity of the Yosemite Lodge beach access s is negatively affecting scenic views.* Actions taken under ORV 2 will remedy this situation. New development or re-development in Yosemite Valley would be designed using design guidelines that promote harmony between the built and natural environments.	NONE
EMPLOYEE HOUSING										
Boys Town Employee Housing Area	Retained	**No.** This housing can be accommodated with other employee housing areas in the river corridor.	**No.** Employee housing in this facility can be relocated to other employee housing facilities in the corridor in order to allow for repurposing of this area for visitor services.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Huff House Employee Housing Area	Not addressed	**No.** There are no other suitable locations to move employee housing outside the river corridor in Yosemite Valley. Housing for employees needs to be proximate to guest services to accommodate shift work-schedules.	**Yes.** This housing facility is necessary to accommodate employees who provide visitor services.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Curry Stables Employee Housing Area	Retained		**Yes.** These employee housing units are occupied year-round and are hard-sided units that are necessary to accommodate employees who provide visitor services.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Ahwahnee Employee Dormitory	Retained			NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
EMPLOYEE HOUSING (cont.)										
Curry Village Employee Residential Area	---	**No.** There are no other suitable locations to move employee housing outside the river corridor in Yosemite Valley. Housing for employees needs to be proximate to guest services to accommodate shift work-schedules.	**Yes.** These employee housing units are occupied year-round and are hard-sided units that are necessary to accommodate employees who provide visitor services.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Ahwahnee Row Employee Housing	Removed			NONE	NONE	NONE	NONE	NONE	NONE	NONE
Lower Tecoya Employee Housing Area	Removed			NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Thousands Cabins Employee Housing	Not addressed			NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Employee Housing	---			NONE	NONE	NONE	NONE	NONE	NONE	NONE
MAJOR ADMINISTRATIVE FACILITIES										
Curry Stables	Relocated (site not specified); day-rides reduced and limited to eastern end and south side of Yosemite Valley	**No.** There are no other suitable locations for a stable operation outside the corridor and in Yosemite Valley that is of sufficient size or proximity to the Valley trail system used to access the Merced Lake High Sierra Camp.	**Yes.** The stable operation at Curry Village supports the High Sierra Camp operations and multi-day backcountry stock supported trips.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Concessioner General Office	Removed	**Yes.** There are adequate facilities outside of the river corridor that could, with interior modification, absorb these functions.	**Yes.** Concession administrative, managerial and logistical support functions are essential to support visitor services but the plan removes these functions from the river corridor.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Concessioner Garage	Removed	**Yes.** There are adequate facilities outside of the river corridor that could, with interior modification, absorb these functions.	**Yes.** The concession operated garage is a critical component of the park operation. Services offered at the garage include: maintenance of park shuttle fleet(s); maintenance of the concession fleet; sales of automotive accessories (including snow chains); and dispatching of tow trucks. The park shuttle fleets are dispatched from a central office located at the garage.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Superintendent's House (Residence 1) and Garage	Removed	**Yes.** There are suitable and appropriate locations outside the river corridor to accommodate a single residential structure.	**No.** The facility has been obsolete since the 1997-flood when it last flooded and substantial damage to the building occurred and was no longer a practical location for park operations such as staff office space.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Volunteer Fire Station	Removed and replaced in redesigned Maintenance Area	**No.** The volunteer fire station is largely staffed by nearby residences and needs to be sited near potential structural fires in employee housing and visitor service areas.	**Yes.** Fire support services and apparatus are essential to provide for public health and safety and resource protection.	NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
MAJOR ADMINISTRATIVE FACILITIES (cont.)										
Yosemite Lodge Garden Terrace and Cliff Room	Retained	**No.** There are no comparable indoor group-spaces outside the river corridor in Yosemite Valley that could absorb these functions.	**Yes.** These indoor group spaces are used daily for interpretive programming, administrative trainings, scientific symposiums and forums, meetings, and special events.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Yosemite Lodge Post Office	Not addressed	**Yes.** This post office is no longer needed to serve visitors or employees in this area, required services can be obtained at the Yosemite Village Post Office outside the river corridor.	**No.** This post office has been operated as a satellite of the main Yosemite Post Office. Prior to the 1997 flood it served employees who have since been relocated. This facility is no longer necessary	NONE	NONE	NONE	NONE	NONE	NONE	NONE
NPS Volunteer Office	---	**Yes.** The administrative support provided to volunteers could be relocated to other administrative facilities in Yosemite Valley outside the river corridor.	**Yes.** Volunteers require access to administrative support functions to perform duties (i.e., coordination with NPS staff, communications, safety equipment, etc).	NONE	NONE	Remove abandoned infrastructure (including tiles, pipes, and abandoned roads) from meadow, riparian, and floodplain habitat. Decompact soils, remove fill, and re-vegetate with riparian species.	NONE	NONE	NONE	NONE
RECREATIONAL/ EDUCATIONAL SERVICES [The following are not considered "major public use facilities". However, the NPS has also evaluated these facilities and their associated activities for relocation potential and for effects on river values]										
Raft Rental	Raft rental relocated to site of ice rink	**Yes.** A seasonal /mobile operation could provide commercial rentals of rafting equipment outside the corridor with no permanent infrastructure	**Yes.** Rafting on the Merced is a recreational activity that enables visitors to experience a close connection to the river.	NONE	ORV 2: The scale of impacts and potential restoration is greater than 200 meters of riverbank.	*Localized riverbank erosion is negatively affecting streambank stability.* All action alternatives will employ brush layering and other re-vegetation techniques to repair eroded banks. Visitor use will be guided to more stable and resilient river access points such as sandy beaches and low-angle slopes. Fencing and signs will be installed protect high use areas that exhibit vegetation loss and eroded soils. Re-vegetated areas will be protected with closure signs, fencing, and/or natural barriers such as rocks and logs	NONE	*Localized riverbank erosion in the vicinity of Housekeeping Camp is negatively affecting traditionally used plant populations.* Actions listed under ORV 2 will remedy this situation	*Localized riverbank erosion is negatively affecting scenic views in the river corridor.* Actions taken under ORV 2 will remedy this situation.	NONE
Ice Rink	Retain	**Yes.** A temporary/seasonal ice rink operation can be located outside the river corridor within the Camp Curry parking area which was the historic location for this winter activity.	**Yes.** Many visitors value the uncrowded traditional winter recreational opportunities in Yosemite Valley.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Bike Rentals	Retained	**Yes.** A seasonal /mobile operation could be located outside the river corridor in Yosemite Valley.	**Yes.** The bike rental operation offers seasonal commercial bicycle and accessibility device rental for unguided visitor recreation.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Art Activity Center	Retained	**Yes.** There are adequate facilities outside of the river corridor that could, with interior modification, absorb these functions.	**No.**	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Tennis Courts	Removed	**No.** No alternative areas of sufficient size or location are available outside the river corridor in Yosemite Valley or Wawona.	**Yes.** The Ahwahnee tennis courts are obsolete and have not been maintained since 2005. The Wawona court however is still used by park visitors and in good condition.	NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 2A: EAST YOSEMITE VALLEY (RECREATIONAL) (CONT.)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
RECREATIONAL/ EDUCATIONAL SERVICES [The following are not considered "major public use facilities". However, the NPS has also evaluated these facilities and their associated activities for relocation potential and for effects on river values] (cont.)										
Swimming Pools	Retained	**No.** These facilities are provided for lodge/hotel guests and other park visitors and must be co-located with overnight accommodations.	**Yes.** The Yosemite Lodge pool has been operated as a public pool, open to Lodge guests as well as other patrons, including park employees and their dependents. This facility is used frequently during high temperatures often experienced in Yosemite Valley in the summer months.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Snack Stands	Retained	**No & Yes.** The Yosemite Lodge snack stand is adjacent to the pool and serves as the entry point for users. However, there are suitable locations outside the corridor in Yosemite Valley for the Happy Isles snack stand.	**No.** The snack stand serves a very limited menu of quick serve refreshments.	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Happy Isles Nature Center	Retained	**No.** The services provided from this facility could not be provided from an alternative location outside of the river corridor due to the unique interpretive service/activity it provides in the area for the relevant natural history and geology.	**Yes.** Serves as the primary interpretation & education center for visitors to east Yosemite Valley and the John Muir / Mist Trail. This facility is used by Nature Bridge as a winter classroom. Classroom activities revolve around the river and water quality.	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SEGMENT 2B: WEST YOSEMITE VALLEY (SCENIC)										
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**				
						ORV 2	**ORV 6**	**ORV 8,9,10**	**ORV 16**	**ORV 20**
CAMPGROUND AND DAY-USE PARKING AREA										
Eagle Creek Campground (New - Alternative 6)	---	**No.** No alternative areas of sufficient size or location are available due to site constraints in Yosemite Valley (such as the floodplain and rockfall hazard zone).	**Yes.** Campgrounds provide a low-cost overnight accommodation that promotes river-related/river-dependent recreational opportunities for visitors of all socioeconomic backgrounds. This campground would be consistent with the level of development permissible in a scenic segment, with the shoreline remaining largely undeveloped and primitive.	NONE	NONE	All campsites within new campgrounds will be located at least 150-feet away from the ordinary high water mark.	All campsites within new campgrounds will be located at least 150-feet away from the ordinary high water mark.	All new campgrounds will be designed and located to avoid or minimize effects to cultural resources.	New development or re-development in Yosemite Valley would be designed using design guidelines that promote harmony between the built and natural environments.	NONE
West Yosemite Valley Overflow Vehicle Parking Area (New – Alternative 6)	---	**No.** There are no other suitable locations outside the river corridor near El Capitan Crossover in Yosemite Valley that allow for the redirection of vehicle traffic entering east Yosemite Valley.	**Yes.** This parking area will provide additional parking opportunities to successfully attain use levels in Alternatives 5 and 6. This parking lot would be consistent with the level of development permissible in a scenic segment, with the shoreline remaining largely undeveloped and primitive.	NONE	NONE	NONE	NONE	NONE	New development or re-development in Yosemite Valley would be designed using design guidelines that promote harmony between the built and natural environments.	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 3: MERCED GORGE (SCENIC)					
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**
ADMINISTRATIVE FACILITIES					
Arch Rock Entrance Station Kiosk	Retained and redesigned	**No.** The entrance station facility is located at the park entrance on Highway 140.	**Yes.** This facility serves as one of the five entry points to Yosemite National Park. It is necessary to have Park staff working at this facility to collect entrance fees and provide visitors with information.	NONE	NONE
Arch Rock Housing (2 duplexes)	Removed	**No.** All suitable alternative locations for this amount of employee housing are also located within the river corridor.	**Yes.** This housing facility is necessary to accommodate employees who work at the entrance station to reduce traffic congestion on the roadways.	NONE	NONE
Arch Rock VUA Office	Not addressed	**No.** This administrative space must be collocated with the entrance station.	**Yes.** This administrative space is necessary for employees who work at the Arch Rock Entrance Station.	NONE	NONE

SEGMENT 4: EL PORTAL (RECREATIONAL)						
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**
						ORV 11
CAMPGROUNDS						
Abbieville / Trailer Village Administrative and RV Campground	---	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** Campgrounds provide a low-cost overnight accommodation that promotes river-related/river-dependent recreational opportunities for visitors of all socioeconomic backgrounds.	NONE	NONE	NONE
MAJOR RETAIL AND FOOD SERVICE						
El Portal Market and Gas Station Complex	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor adjacent to State Route 140. The service station requires considerable underground fuel distribution equipment that would be infeasible to relocate.	**Yes.** These minimal community services and amenities are required to serve the residents in El Portal due to the distance of comparable services in gateway communities.	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 4: EL PORTAL (RECREATIONAL) (cont.)						
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**
						ORV 11
DAY-USE VISITOR PARKING						
El Portal Remote Parking Area at Abbieville / Trailer Village (New – Alternatives 3, 4, 5 and 6)	---	**No.** No alternative areas of sufficient size or location are available outside the river corridor with direct access to Highway 140 before entering Yosemite National Park boundary.	**Yes.** This parking area will provide access to Yosemite Valley for visitors through shuttle and transit service during peak use periods especially when the traffic diversion system at the El Capitan Crossover is implemented.	NONE	NONE	NONE
EMPLOYEE HOUSING						
Rancheria Employee Housing	Retained	**No.** All suitable alternative locations for this amount of employee housing are also located within the river corridor.	**Yes.** These housing facilities are necessary to accommodate employees who provide visitor services.	NONE	NONE	NONE
Old El Portal Employee Housing	Retained			NONE	NONE	*Informal trails, non-essential gravel roads and visitor use contribute to archeological site disturbances.* All alternatives will remove informal trails, non-essential roads, and abandoned infrastructure to address the archeological site disturbances.
El Portal Town Center In-fill Employee Housing (New in Alternative 5)	Not addressed			NONE	NONE	Construction of infill employee housing units will not adversely impact ORVs.
Abbieville / Trailer Village Employee Housing	---			NONE	NONE	NONE
Motor Inn Cabins	Retained			NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 4: EL PORTAL (RECREATIONAL) (cont.)						
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**
						ORV 11
ADMINISTRATIVE FACILITIES						
El Portal Maintenance and Wastewater Treatment Complex	Retained and Expanded	**No.** No alternative areas of sufficient size or location are available outside the corridor in El Portal.	**Yes.** This facility houses wastewater treatment processing, large vehicle maintenance and fleet storage, shops for all maintenance operations; a central distribution point for supply, commissary, and warehouse operations, the park's emergency communications center and fire cache operation; and training, office, and critical administrative operations space for park operations. This facility is essential to support public use of the river corridor, public health and safety, and resource protection.	NONE	NONE	NONE
Murchison House	Retained	**No.** Relocation outside the river corridor would diminish the historic significance of this facility because its setting is the primary characteristic for its significance.	**Yes.** This structure has served as employee residences and administrative offices previously. However, safety, access, and utility upgrades would be required to make the facility operable again.	NONE	NONE	NONE
NPS Offices in Old El Portal	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** This facility provides necessary administrative space for park operations which support public use and resource protection efforts in the river corridor. However, the functions performed there can be relocated within the El Portal Administrative Complex.	NONE	NONE	NONE
NatureBridge Office & Employee Housing Building	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** NatureBridge hosts multi-day environmental education programs in Yosemite for school children. This facility provides necessary employee housing and administrative space for this park partner organization.	NONE	NONE	NONE
El Portal Post Office	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** These facilities provide necessary services for nearby residents.	NONE	NONE	NONE
El Portal Elementary School/High school	Retained and expand if needed			NONE	NONE	NONE
Carroll Clark Community Hall	Retained			NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENT 4: EL PORTAL (RECREATIONAL) (cont.)						
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**
						ORV 11
El Portal Fire Station	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** Fire support services and apparatus are essential to provide for public health and safety and resource protection.	NONE	NONE	NONE
AT&T Building	Not addressed	**No.** Due to transmission and receiving requirements of the system this facility cannot be relocated.	**Yes.** Serves as central distribution point for telecommunications network in El Portal. This telecommunication facility is necessary to support NPS's management and administration of the river corridor. This facility is also required for the transmission of microwave signals.	NONE	NONE	NONE
Odger's Bulk Fuel Storage Facility	Not addressed	**Yes.** This facility must be removed from NPS land, in accordance with federal law (30 USC § 185 - Rights-of-way for pipelines through Federal lands).	**Yes.** Bulk fuel storage needed for park operations serving utility infrastructure, back-up generators and heating / cooling systems for numerous visitor services can be obtained outside the river corridor.	NONE	NONE	NONE
Old Wastewater Treatment Plant	Not addressed	**Yes.** This facility has been obsolete for decades.	**No.** A plan of action to remove the above-ground obsolete infrastructure will be developed in consultation with American Indian tribes and groups.	NONE	NONE	*Abandoned infrastructure impacts the setting of a site with extremely sensitive cultural materials valued by traditionally associated American Indians.* The site will be protected from any further development. A plan of action for addressing the abandoned infrastructure will be developed in consultation with traditionally associated American Indian tribes and groups. Solution(s) developed will also include a recommended approach for deterring visitor use within the site.

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENTS 6 & 7: WAWONA (RECREATIONAL)							
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**	
						ORV 13	**ORV 14**
LODGING							
Wawona Hotel Complex	Retained	**No.** The Wawona Hotel is a National Historic Landmark, and relocation outside the river corridor would diminish its historic significance.	**Yes.** This National Historic Landmark provides overnight accommodations that promote river-related/river-dependent recreational opportunities.	NONE	NONE	*The Wawona Archeological District is subject to site-specific impacts from park operations, visitor use, artifact collection, and vandalism.* Monitoring frequency will be increased at affected sites, archeological site treatment measures will be considered to address impacts, and informal trails will be removed.	NONE
CAMPGROUND							
Wawona Campground	Rehabilitate for year round use (100 sites + 30 group sites)	**No.** No alternative areas of sufficient size, slope, aspect or location could accommodate this campground outside the river corridor.	**Yes.** Campgrounds provide a low-cost overnight accommodation that promotes river-related/river-dependent recreational opportunities for visitors of all socioeconomic backgrounds.	NONE	NONE	*Visitor use at Wawona Campground is potentially causing impacts to the shallow deposit of historic artifacts and features. Modern campsites sometimes obscure the historic setting of Camp A.E. Wood.* Seven campsites that cause potential impacts to the archeological site are proposed for removal. Monitoring frequency will be increased at affected sites and the need for archeological site treatment measures to address impacts will be considered.	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENTS 6 & 7: WAWONA (RECREATIONAL) (cont.)							
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**	
						ORV 13	**ORV 14**
RETAIL AND FOOD SERVICE							
Wawona Store	Retained and redesign	**No.** No alternative areas of sufficient size or location are available outside the river corridor. The services offered at the Wawona Store must be reasonably proximate to the lodging and employee housing. Parking facilities must be proximate to the Wawona Store and Picnic area.	**Yes.** This store is needed to support visitors, park employees, and private in-holders. It offers a limited range of merchandise including packaged and fresh groceries, sundries, and outdoor products frequently needed by campers, hikers and residents.	NONE	NONE	*Shoulder and off-road parking causes impacts to archeological resources*. Monitoring frequency will be increased at affected sites and site treatment measures will be considered to address impacts. Alternatives remove informal trails and fire rings to prevent continuing disturbance.	NONE
Wawona Gas Station	Retained and redesign	**No.** No alternative areas of sufficient size or location are available outside the river corridor. This facility must be located along the Wawona Road. The service station requires considerable underground fuel distribution equipment that would be infeasible to relocate.	**Yes.** Serves visitors and local residents. Provides vehicle fuel, limited automotive services such as tire repair, and snow chain sales/installation. The concessioner currently operates a tow truck from this site. This garage provides necessary support services to park employees and private citizens who own property within the river corridor in Wawona.	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENTS 6 & 7: WAWONA (RECREATIONAL) (cont.)							
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**	
						ORV 13	**ORV 14**
ADMINISTRATIVE FACILITIES							
Wawona Maintenance Yard Complex and Wildland Fire Station (New – Common To Alternatives 2 – 6)	Remove structures from floodplain-Redesign and construct new district maintenance facility	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** This facility provides large vehicle and fleet storage, indoor, outdoor and shop spaces for necessary maintenance operations; fire, law enforcement, entrance station, campground reservation, and the wilderness operation administrative office space. The facility houses critically important park operation functions, the absence of which would undermine NPS's ability to support public use of the river corridor, public health and safety, and resource protection.	NONE	NONE	*Informal trails and operational and visitor uses cause ground disturbing impacts to surface and sub-surface archeological resources.* Informal trails will be removed, and the stock camp will be relocated to an alternative site. New facilities will not impact ORVs.	NONE
Wawona Wastewater Treatment Plant	Construct new wastewater treatment plant for year round disposal	**No.** No alternative areas of sufficient size or location are available outside the corridor in Wawona.	**Yes.** This facility provides wastewater treatment processing and water distribution monitoring. This facility is critically needed to support public use of the river corridor, public health and safety, and resource protection (by preventing discharge of untreated water into the Merced River).	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENTS 6 & 7: WAWONA (RECREATIONAL) (cont.)							
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**	
						ORV 13	**ORV 14**
ADMINISTRATIVE FACILITIES (cont.)							
Wawona Stables	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** With the elimination of commercial horseback day-rides from Yosemite Valley and Tuolumne Meadows, this recreational activity will be expanded in Wawona. Because Wawona is less crowded than Yosemite Valley, there will be fewer conflicts between hikers and day-rides on Wawona trails.	NONE	NONE	NONE	NONE
Wawona Store	Retained and redesign	**No.** No alternative areas of sufficient size or location are available outside the river corridor. The services offered at the Wawona Store must be reasonably proximate to the lodging and employee housing. Parking facilities must be proximate to the Wawona Store and Picnic area.	**Yes.** This store is needed to support visitors, park employees, and private in-holders. It offers a limited range of merchandise including packaged and fresh groceries, sundries, and outdoor products frequently needed by campers, hikers and residents.	NONE	NONE	*Shoulder and off-road parking causes impacts to archeological resources*. Monitoring frequency will be increased at affected sites and site treatment measures will be considered to address impacts. Alternatives remove informal trails and fire rings to prevent continuing disturbance.	NONE
RECREATIONAL/EDUCATIONAL SERVICES							
Pioneer History Center	Retained	**No.** This facility houses key operational functions that could not be relocated unless a suitable alternative site is identified.	**Yes.** This facility contains interpretive displays, historic structures and equipment used in NPS's living history programs. This facility interprets the history of the Wawona area for park visitors and thus supports public understanding of the history and resources in this portion of the river corridor.	NONE	NONE	NONE	NONE

TABLE 7-1: EVALUATION OF FACILITIES WITHIN THE RIVER CORRIDOR BY RIVER SEGMENT (CONTINUED)

SEGMENTS 6 & 7: WAWONA (RECREATIONAL) (cont.)							
Facility	**1980 GMP Action**	**Feasible to relocate outside the river corridor?**	**Necessary for public use or resource protection?**	**Adverse Impacts**	**Management Concerns**	**Localized Concerns and Enhancement Actions**	
						ORV 13	**ORV 14**
ECREATIONAL/EDUCATIONAL SERVICES (cont)							
Wawona Hotel Golf Course	Retained	**No.** No alternative areas of sufficient size or location are available outside the river corridor.	**Yes.** The golf course was built in 1917 and has been determined to be contributing features of the Wawona Hotel National Historic Landmark which is a component of the Historic Resources ORV for this segment. In addition, the Golf Course serves as the spray field for gray water disposal in Wawona.	NONE	NONE	NONE	NONE

TABLE 7-2: MAJOR PUBLIC USE FACILITIES REMOVED IN GMP THAT ARE RETAINED IN THE MRP[21]

Major Public-Use Facility	1980 GMP Action	MRP Action	Reason for decision
Historic "Huff House" (Peterson House)	Removed	Retained	There are no other suitable locations to move employee housing outside the river corridor in Yosemite Valley. Housing for employees needs to be proximate to guest services to accommodate shift work-schedules.
Ahwahnee Row Employee Housing	Removed	Retained	There are no other suitable locations to move employee housing outside the river corridor in Yosemite Valley. Housing for employees needs to be proximate to guest services to accommodate shift work-schedules.
Lower Tecoya Employee Housing Area	Removed	Retained	There are no other suitable locations to move employee housing outside the river corridor in Yosemite Valley. Housing for employees needs to be proximate to guest services to accommodate shift work-schedules.
Village Sports Shop	Removed	Repurposed for non-commercial visitor use	The service offered is duplicative of other retail offerings in the Yosemite Village area, which serves as a geographically distinct visitor service node in Yosemite Valley. However, the facility is necessary to provide visitor orientation associated with the redesigned parking areas.
Curry Village Orchard Parking	Removed	Redeveloped	This parking lot is needed to support day-use and overflow parking for east Yosemite Valley campgrounds. Visitor parking must be immediately adjacent to overnight lodging accommodations.
Volunteer Fire Station	Removed and replaced in redesigned Maintenance Area	Retained	Fire support services and apparatus are essential to provide for public health and safety and resource protection. The volunteer fire station is largely staffed by nearby residences and needs to be sited near potential structural fires in employee housing and visitor service areas.

[21] GMP actions listed here include the amendments made by the 1992 Concession Services Plan for commercial services

TABLE 7-2: MAJOR PUBLIC USE FACILITIES REMOVED IN GMP THAT ARE RETAINED IN THE MRP (CONTINUED)

Major Public-Use Facility	1980 GMP Action	MRP Action	Reason for decision	Potential local adverse impacts to river value(s)	Actions Required to protect river values
SEGMENT 2A: RECREATIONAL (cont.)					
Curry Stables	Relocated; day-rides reduced and limited to eastern end and south side of Yosemite Valley	Retained (commercial horseback day-rides eliminated)	There are no other suitable locations for a stable operation outside the corridor and in Yosemite Valley that are of sufficient size or proximity to the Valley trail system used to access the Merced Lake High Sierra Camp.	NONE	N/A
Yosemite Lodge Nature Shop	One gift shop retained with clothing sales removed.	Repurposed for non-commercial use	The **service** offered is duplicative of other retail offerings in Yosemite Valley. However, the **facility** is necessary for non-commercial visitor use.	NONE	N/A
SEGMENT 3: SCENIC					
Arch Rock Housing (2 duplexes)	Removed	Retained	This housing facility is necessary to accommodate employees who work at the entrance station due to the lack of sufficient employee housing in El Portal or surrounding areas. All suitable alternative locations for this amount of employee housing are also located within the river corridor.	NONE	N/A
SEGMENT 6 & 7: RECREATIONAL					
Wawona Maintenance Yard Complex and Wildland Fire Station	Remove structures from floodplain; Redesign and construct new district maintenance facility	Retained	No alternative areas of sufficient size or location are available outside the river corridor. The facility houses critically important park operation functions the absence of which would undermine NPS's ability to support public use of the river corridor, public health and safety, and resource protection.	Cultural – Informal trails and operational and visitor uses cause ground disturbing impacts to surface and sub-surface archeological resources.	Informal trails will be removed, and the stock camp will be relocated to an alternative site. New facilities will not impact ORVs.

TABLE 7-3: MAJOR PUBLIC USE FACILITIES RETAINED IN GMP THAT ARE REMOVED IN THE MRP[22]

Major Public-Use Facility	1980 GMP Action	MRP Action	Reason for decision	Potential local adverse impacts to river value(s)	Actions Required to protect river values
SEGMENT 2A: RECREATIONAL					
Happy Isles Snack Stand	Retained	Removed	This service is redundant; snacks are provided in many other locations in Yosemite Valley.	NONE	N/A
Art Activity Center	Retained	Removed	There are adequate facilities outside of the river corridor that could, with interior modification, absorb these functions.	NONE	N/A

[22] GMP actions listed here include the amendments made by the 1992 Concession Services Plan for commercial services

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 1: WILDERNESS					
Merced Lake High Sierra Camp	Removed	Converted to a temporary pack camp	Removed	Reduced	Retained
Merced Lake Backpackers Camping Area	Converted to dispersed camping	Converted to dispersed camping	Retained /expanded as designated camping	Retained	Retained
Little Yosemite Valley Camping Area	Converted to dispersed camping	Converted to dispersed camping	Retained	Retained	Retained
Moraine Dome Camping Area	Converted to dispersed camping	Converted to dispersed camping	Retained	Retained	Retained
SEGMENT 2A: RECREATIONAL					
CURRY VILLAGE & EAST YOSEMITE VALLEY CAMPGROUND AREA					
Upper Pines Campground	Reduced	Increased	Increased	Increased	Increased
Lower Pines Campground	Reduced	Reduced	Reduced	Reduced	Reduced
North Pines Campground	Removed	Reduced	Reduced	Reduced	Reduced
Backpackers Campground	Reduced/Relocated	Reduced/Relocated	Reduced/Relocated	Retained/partially relocated	Retained/partially relocated
Yosemite Valley Campground Reservation Center/Office	Relocated	Relocated	Relocated	Relocated	Relocated
Housekeeping Camp Lodging Units	Removed	Removed (converted to a day-use river access area)	Reduced	Reduced	Reduced
Housekeeping Camp Laundry	Removed	Removed	Retained	Retained	Retained
Housekeeping Camp Shower Houses and Restrooms	Retained 1 restroom. Removed shower houses and laundry.	Retained 1 restroom. Removed shower houses and laundry.	Retained	Retained	Retained
Housekeeping Camp Grocery Store	Removed	Removed	Removed	Retained	Retained
Curry Village Lodging and Shower Houses	Lodging units increased	Lodging units reduced	Lodging units reduced	Lodging units increased	Lodging units increased
Curry Village Pavilion and Food Service	Retained	Retained	Retained	Retained	Retained
Curry Village Overnight Parking	Reduced	Reduced	Reduced	Retained	Retained
Curry Village Orchard Parking	Retained	Reduced	Reduced	Retained	Retained
Curry Village Grocery Store	Retained	Retained	Retained	Retained	Retained
Curry Village Pizza Deck and Bar	Retained	Retained	Retained	Retained	Retained

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 2A: RECREATIONAL (cont.)					
CURRY VILLAGE & EAST YOSEMITE VALLEY CAMPGROUND AREA (cont.)					
Curry Village Raft Rental	Removed	Removed	Relocated	Relocated	Relocated
Curry Village Ice Rink	Removed	Removed	Removed	Relocated (outside the river corridor)	Relocated (outside the river corridor)
Curry Stables	Removed	Reduced	Removed	Retained	Retained
Curry Village Bike Rental	Removed	Removed	Removed	Relocated (outside the river corridor)	Relocated (outside the river corridor)
The Ahwahnee Rooms and Cottages	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Parking Lot	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Bar and Food Service	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Dining Room	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Gift Shop	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Sweet Shop	Retained	Retained	Retained	Retained	Retained
The Ahwahnee Swimming Pool	Removed	Removed	Removed	Retained	Retained
The Ahwahnee Tennis Court	Removed	Removed	Removed	Removed	Removed
Boys Town Employee Housing Area	Retained (as lodging)	Removed	Removed (converted to walk-in campground)	Retained (as lodging)	Retained (as lodging)
Curry Stables Employee Housing Area	Removed	Retained	Removed	Retained	Retained
Ahwahnee Employee Dormitory	Retained	Retained	Retained	Retained	Retained
Curry Village Employee Residence Area	Retained	Retained	Retained	Retained	Retained
Historic Peterson House	Retained	Retained	Retained	Retained	Retained
Huff House Temporary Employee Housing (Existing)	Removed	Removed	Removed	Reduced	Removed
Huff House Employee Dormitory (New)	Proposed	Proposed	Proposed	Not proposed	Proposed
Happy Isles Nature Center	Retained	Retained	Retained	Retained	Retained
Happy Isles Snack Stand	Removed	Removed	Removed	Removed	Removed
Le Conte Memorial Lodge (National Historic Landmark)	Retained	Retained	Retained	Retained	Retained
Northside Drive (Stoneman Bridge to Yosemite Village Day-use Parking Area)	Removed	Removed	Retained	Retained	Retained

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 2A: RECREATIONAL (cont.)					
CURRY VILLAGE & EAST YOSEMITE VALLEY CAMPGROUND AREA (cont.)					
Southside Drive (through Stoneman Meadow)	Removed	Removed	Removed	Retained	Retained
Happy Isles Loop Road	Retained	Retained	Retained	Retained	Retained
Sugar Pine Bridge	Removed	Removed	Removed	Retained	Retained
Ahwahnee Bridge	Removed	Removed	Removed	Retained	Retained
Stoneman Bridge	Removed	Removed	Retained	Retained	Retained
Clark's Bridge	Retained	Retained	Retained	Retained	Retained
Happy Isles Road Bridge	Retained	Retained	Retained	Retained	Retained
Housekeeping Camp Bridge	Retained	Retained	Retained	Retained	Retained
Upper River Walk-in and Group Campground (New)	Not proposed	Not proposed	Proposed	Proposed	Proposed
Lower River Walk-in and Drive-in Campground (New)	Not proposed	Not proposed	Proposed	Proposed	Proposed
West of Backpackers Campground (New)	Proposed	Proposed	Proposed	Proposed	Proposed
Upper Pines Walk-in Campground (New)	Not proposed	Not proposed	Proposed	Proposed	Proposed
Upper Pines RV Campground Loop (New)	Not proposed	Proposed	Proposed	Proposed	Proposed
YOSEMITE VILLAGE AREA					
Concessioner General Office	Removed	Removed	Removed	Removed	Removed
Ahwahnee Row Employee Housing	Removed	Retained	Retained	Retained	Retained
Lower Tecoya Employee Housing Area	Removed	Retained	Retained	Retained	Retained
Lost Arrow Employee Housing Area	Removed/Redeveloped (administrative parking)	Removed/Redeveloped (administrative parking)	Re-developed (with permanent housing)	Re-developed (with permanent housing)	Re-developed (with permanent housing)
Concessioner Garage	Removed	Removed	Removed	Removed	Removed
Volunteer Fire Station	Retained	Retained	Retained	Retained	Retained
Village Store	Retained	Retained	Retained	Retained	Retained
Village Grill	Retained	Retained	Retained	Retained	Retained
Village Store Parking Lot	Retained	Retained	Retained	Retained	Retained
Village Sports Shop	Converted to visitor contact station	Converted to visitor contact station	Converted to visitor contact station	Converted to visitor contact station	Converted to visitor contact station
Art Activity Center/ Bank Building	Removed	Removed	Removed	Removed	Removed
Superintendent's House (Residence 1)	Relocated	Relocated	Relocated	Removed	Retained
Yosemite Valley Chapel	Retained	Retained	Retained	Retained	Retained

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 2A: RECREATIONAL (cont.)					
YOSEMITE VILLAGE AREA (cont.)					
Sentinel Bridge	Retained	Retained	Retained	Retained	Retained
Sentinel Drive	Retained	Retained	Retained	Retained	Retained
Re-route Northside Drive south of Yosemite Village Day-use Parking Area at least 150 feet from the ordinary high-water mark (New)	Rerouted	Rerouted	Not proposed	Rerouted	Not proposed
Grade separated pedestrian crossing at Yosemite Village Day-use Parking Area Intersection (New)	Not proposed	Not proposed	Not proposed	Not proposed	Proposed
Intersection of Northside Drive and Sentinel Drive (New)	Realigned	Realigned	Retained	Realigned	Redesigned intersection with roundabout
Yosemite Village Day-use Parking Area (Camp 6)	Re-developed and expanded	Re-developed and expanded	Re-developed and expanded	Re-developed and expanded	Re-developed and expanded
Intersection of Northside Drive and Village Drive (New)	Removed with realignment of Northside Drive	Removed with realignment of Northside Drive	Redesigned intersection	Redesigned intersection with roundabout	Redesigned intersection with roundabout
YOSEMITE LODGE AND CAMP 4 CAMPGROUND AREA					
Camp 4 Campground	Retained	Retained	Retained	Retained	Retained
Yosemite Lodge Overnight Accommodations	Removed	Reduced	Retained	Retained	Expanded
Yosemite Lodge Overnight Parking	Retained	Retained	Retained	Retained	Retained
Yosemite Lodge Garden Terrace and Cliff Room	Repurposed for NPS use to provide visitor services	Retained	Retained	Retained	Retained
Yosemite Lodge Swimming Pool	Removed	Removed	Removed	Retained	Retained
Yosemite Lodge Snack Stand	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Nature Shop	Converted to non-commercial visitor use	Converted to commercial visitor use	Converted to commercial visitor use	Converted to commercial visitor use	Converted to commercial visitor use
Yosemite Lodge Housekeeping and Maintenance Building	Removed	Relocate within Yosemite Lodge Complex	Relocate within Yosemite Lodge Complex	Relocate within Yosemite Lodge Complex	Relocate within Yosemite Lodge Complex
Yosemite Lodge Gift and Grocery / Convenience Shop	Converted to non-commercial visitor use	Reduced	Reduced	Reduced	Reduced
Yosemite Lodge Mountain Room Bar and Food Service	Retained (Converted to non-commercial visitor use)	Retained	Retained	Retained	Retained
Yosemite Lodge Mountain Room Restaurant	Removed	Retained	Retained	Retained	Retained

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 2A: RECREATIONAL (cont.)					
YOSEMITE LODGE AND CAMP 4 CAMPGROUND AREA (cont.)					
Yosemite Lodge Food Court	Retained	Retained	Retained	Retained	Retained
Yosemite Lodge Post Office	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Bike Stand	Removed	Removed	Removed	Relocated	Relocated
Yosemite Lodge Highland Court Employee Housing	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Thousands Cabins Employee Housing	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Employee Housing (New)	Not proposed	Proposed	Proposed	Proposed	Proposed
NPS Volunteer Office (former Wellness Center)	Removed	Removed	Removed	Removed	Removed
Swinging Bridge	Retained	Retained	Retained	Retained	Retained
Superintendent's Bridge	Retained	Retained	Retained	Retained	Retained
West of Yosemite Lodge Day-use and Bus Day-use Parking Area (New)	Not proposed	Proposed	Proposed	Proposed	Proposed
East of Camp 4 Campground (New)	Proposed	Proposed	Proposed	Proposed	Proposed
West of Lodge Campground (New)	Proposed	Not proposed	Proposed	Not proposed	Not proposed
Grade separated pedestrian crossing at Yosemite Lodge intersection (New)	Not proposed	Not proposed	Proposed (Final alignment and type to be determined)	Proposed (Final alignment and type to be determined)	Proposed (Final alignment and type to be determined)
Yellow Pine Administrative Campground	Removed	Retained	Retained	Retained	Retained
SEGMENT 2B: SCENIC					
WEST YOSEMITE VALLEY					
Eagle Creek Campground (New)	Not proposed	Not proposed	Not proposed	Not proposed	Proposed
El Capitan Crossover	Retained	Retained	Retained	Retained	Retained
El Capitan Crossover Bridge	Retained	Retained	Retained	Retained	Retained
Pohono Bridge	Retained	Retained	Retained	Retained	Retained
West Yosemite Valley Overflow Vehicle Parking Area (New)	Not proposed	Not proposed	Not proposed	Not proposed	Proposed
SEGMENT 3: SCENIC					
Arch Rock Entrance Station Kiosk	Retained	Retained	Retained	Retained	Retained
Arch Rock Housing (2 duplexes)	Retained	Retained	Retained	Retained	Retained
Arch Rock VUA Office	Retained	Retained	Retained	Retained	Retained

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 4: RECREATIONAL					
El Portal Administrative Complex	Retained	Retained	Retained	Retained	Retained
Murchison House	Retained	Retained	Retained	Retained	Retained
Rancheria Employee Housing (Existing)	Retained	Retained	Retained	Retained	Retained
Rancheria Employee Housing In-fill (New)	Proposed	Proposed	Proposed	Proposed	Proposed
Old El Portal Employee Housing (Existing)	Retained	Retained	Retained	Retained	Retained
Old El Portal Employee Housing (New)	Proposed	Proposed	Proposed	Proposed	Proposed
El Portal Town Center In-fill Employee Housing (New)	Not proposed	Not proposed	Not proposed	Proposed	Not proposed
Abbieville / Trailer Village Employee Housing (New)	Proposed	Not proposed	Not proposed	Not proposed	Proposed
Abbieville / Trailer Village Employee Housing (Existing)	Removed	Retained	Retained	Removed	Removed
Motor Inn Cabins, historic El Portal Hotel	Retained	Retained	Retained	Retained	Retained
El Portal Remote Parking Area at Abbieville / Trailer Village (New)	Not proposed	Proposed	Proposed	Proposed	Proposed
Abbieville / Trailer Village Administrative and RV Campground (New)	Not proposed	Proposed	Proposed	Proposed	Not proposed
NPS Offices in Old El Portal	Retained	Retained	Retained	Retained	Retained
NatureBridge Office / Employee Housing Building	Retained	Retained	Retained	Retained	Retained
El Portal Market and Gas Station Complex	Retained	Retained	Retained	Retained	Retained
El Portal Post Office	Retained	Retained	Retained	Retained	Retained
El Portal Elementary School / High school	Retained	Retained	Retained	Retained	Retained
Carroll Clark Community Hall	Retained	Retained	Retained	Retained	Retained
Mariposa County Pool	Retained	Retained	Retained	Retained	Retained
El Portal Fire Station	Retained	Retained	Retained	Retained	Retained
AT&T Building	Retained	Retained	Retained	Retained	Retained
SEGMENT 4: RECREATIONAL (cont.)					
Bulk Fuel Terminal and Storage Facility	Removed	Removed	Removed	Removed	Removed
Old Wastewater Treatment Plant	Develop action plan to address abandoned infrastructure	Develop action plan to address abandoned infrastructure	Develop action plan to address abandoned infrastructure	Develop action plan to address abandoned infrastructure	Develop action plan to address abandoned infrastructure

TABLE 7-4: MAJOR PUBLIC-USE FACILITIES PROVIDED WITHIN THE RIVER CORRIDOR - ALTERNATIVES COMPARISON (CONTINUED)

Major Public Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENTS 6 & 7: RECREATIONAL					
Wawona Campground	Reduced	Reduced	Reduced	Reduced	Reduced
Wawona Hotel: Lodging Units	Retained	Retained	Retained	Retained	Retained
Wawona Hotel: Clark Cottage	Retained	Retained	Retained	Retained	Retained
Wawona Hotel Restaurant and Lobby	Retained	Retained	Retained	Retained	Retained
Wawona Hotel Tennis Court	Removed	Removed	Retained	Retained	Retained
Wawona Hotel Golf Course & Shop	Removed	Removed	Retained	Retained	Retained
Wawona Hotel Swimming Pool	Retained	Retained	Retained	Retained	Retained
Hill Studio Interpretation and Retail	Retained	Retained	Retained	Retained	Retained
Wawona Maintenance Yard Complex and Wildland Fire Station	Retained and redeveloped	Retained and redeveloped	Retained and redeveloped	Retained and redeveloped	Retained and redeveloped
Wawona Wastewater Treatment Plant	Retained	Retained	Retained	Retained	Retained
Wawona Gas Station	Retained	Retained	Retained	Retained	Retained
Wawona Store	Retained	Retained	Retained	Retained	Retained
Wawona Store Parking Area	Retained	Retained	Retained	Retained	Retained
Wawona Stables	Removed and converted to stock use campground	Removed and converted to stock use campground	Removed and converted to stock use campground	Retained	Removed and converted to stock use campground
Pioneer History Center	Retained	Retained	Retained	Retained	Retained

TABLE 7-5: SUMMARY OF FACILITIES REMOVED OR RELOCATED OUTSIDE THE RIVER CORRIDOR COMMON TO ALTERNATIVES 2–6

Major Public-Use Facility	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
SEGMENT 2A: RECREATIONAL					
CURRY VILLAGE & EAST YOSEMITE VALLEY CAMPGROUND AREA					
Backpackers Campground	Reduced (Relocated)	Reduced (Relocated)	Reduced (Relocated)	Retained/(partially relocated)	Retained/(partially relocated)
Curry Village Raft Rental	Removed	Removed	Relocated	Relocated	Relocated
Curry Village Ice Rink	Removed	Removed	Removed	Relocated outside the river corridor	Relocated outside the river corridor
Curry Village Bike Rental	Removed	Removed	Removed	Relocated outside the river corridor	Relocated outside the river corridor
The Ahwahnee Tennis Court	Removed	Removed	Removed	Removed	Removed
Boys Town Employee Housing Area	Relocated to Huff House Area/site converted to visitor accommodations	Relocated to Huff House Area/site ecologically restored	Relocated to Huff House Area/site converted to walk-in campground	Relocated to Lost Arrow Dormitory and El Portal/ converted to visitor overnight accommodations	Relocated to Huff House Area/converted to visitor overnight accommodations
Huff House Employee Housing	Tent cabins Removed/ Replaced with dormitories	Tent cabins Removed/ Replaced with dormitories	Tent cabins Removed/ Replaced with dormitories	Tent cabins Reduced/ beds relocated to El Portal	Tent cabins Removed/ Replaced with dormitories
Happy Isles Snack Stand	Removed	Removed	Removed	Removed	Removed
YOSEMITE VILLAGE AREA					
Concessioner General Office	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated
Concessioner Garage	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated
Art Activity Center/ Bank Building	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated
YOSEMITE LODGE AND CAMP 4 CAMPGROUND AREA					
Yosemite Lodge Snack Stand	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Post Office	Removed	Removed	Removed	Removed	Removed
Yosemite Lodge Bike Stand	Removed	Removed	Removed	Facility Removed/ Function Relocated	Facility Removed/ Function Relocated
Yosemite Lodge Highland Court Employee Housing	Removed	Removed / Replaced with dormitory	Removed / Replaced with dormitory	Removed / Replaced with dormitory	Removed / Replaced with dormitory
Yosemite Lodge Thousands Cabins Employee Housing	Removed	Removed / Replaced with dormitory	Removed / Replaced with dormitory	Removed / Replaced with dormitory	Removed / Replaced with dormitory
NPS Volunteer Office (former Wellness Center)	Relocated	Relocated	Relocated	Relocated	Relocated
SEGMENT 4: RECREATIONAL					
Bulk Fuel Terminal and Storage Facility	Removed	Removed	Removed	Removed	Removed

8. ALTERNATIVES

INTRODUCTION

This chapter presents the six alternatives proposed in the *Merced Wild and Scenic River Final Comprehensive Management Plan/Environmental Impact Statement (Final Merced River Plan/EIS)* and identifies the agency's preferred alternative. Substantial discussion is devoted to the alternatives considered in detail to assist readers in evaluating their comparative merits. A review of other alternatives that were considered but eliminated from detailed study is also provided. Alternative 1 (No Action) represents a continuation of current management practices and provides a frame of reference for the actions proposed in the action alternatives. Finally, the chapter concludes with a comprehensive analysis of the cumulative effect to each river value from the suite of actions proposed in each alternative.

The Process Used to Develop the Alternatives

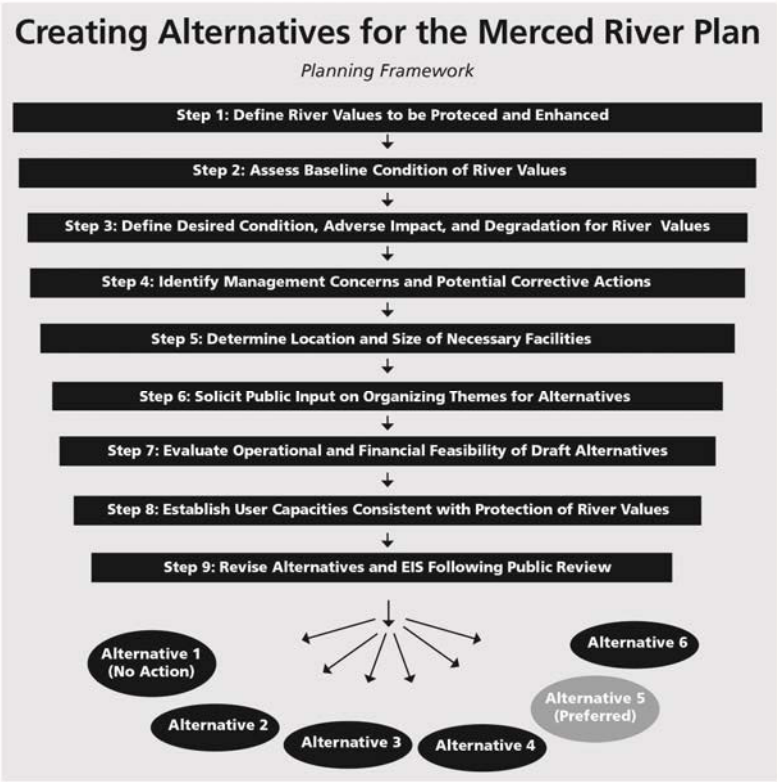
The Merced River Planning Framework

The National Environmental Policy Act (NEPA) requires federal agencies to rigorously explore a range of reasonable alternatives when proposing a major federal action. NEPA also mandates an early and open process to determine the scope of issues surrounding the proposed action, to develop options for addressing those issues, and to provide for public review and comment on the environmental analyses provided in the project's environmental impact statement (EIS).

Using a full complement of park personnel, including experts in park operations, facilities, and cultural and natural resources, the National Park Service (NPS) devoted several years of effort (from 2009 to 2014) to develop five action alternatives for managing the river corridor (Table 8-1). In building the alternatives, the Merced River planning team worked within a framework that included nine major steps, which are explained below. Although this framework is described as a series of sequential activities, planning is fundamentally iterative. At each step, new information is uncovered and new insight is gained that can trigger changes to prior decisions. Additionally, extensive internal review and public input influenced the process, leading to still more revisions. Although time-consuming, this process of review and revision ultimately led to a stronger end product, both in form and content.

The NPS has identified a preferred alternative; however, all action alternatives protect and enhance river values. Collectively, the alternatives represent a wide range of options for future management of the Merced River corridor. The following sections provide greater detail about each step in the planning process.

Figure 8-1: Creating Alternatives for the Merced River Plan



Step 1: Define River Values to be Protected and Enhanced

The Wild and Scenic Rivers Act (WSRA) mandates that each wild and scenic river "… shall be administered in such manner as to protect and enhance the values which caused it to be included in said system" (WSRA, Section 10 (a)). The values to be protected include the river's free-flowing condition, water quality, and other values that have been determined to be "outstandingly remarkable." The Interagency Wild and Scenic Rivers Coordinating Council (Interagency Council) criteria for outstandingly remarkable values (ORVs) state that the value must be river-related and rare, unique, or exemplary in a regional or national context.

The NPS began the process of identifying the ORVs for the Merced River in 1996. After completing other steps in the alternative development process (discussed below), the ORVs were revisited several times (in 2000, 2005, and 2009). Each time, the NPS revised and updated the list, with further definitional clarification from the Interagency Council.

The planning team conducted internal ORV workshops, drawing upon scientific information, subject-matter expertise, peer review, government partners, management input, and expert guidance from other Wild and Scenic River managers. Public scoping comments regarding ORVs were integrated into the *Draft 2010 Outstandingly Remarkable Values Report* for the Merced Wild and Scenic River, which represented the culmination of this work.

Step 2: Assess Baseline Condition of River Values

After the release of the 2010 report, public workshops were held to solicit additional information on ORV locations and important features, to acquire more knowledge and information about specific ORVs or their components, and to gather suggestions about how river values would best be protected. A revised ORV report was posted to the Yosemite National Park website in May 2011. Additional opportunities to comment on the ORVs were provided through the release of the fall 2011 and spring 2012 planning workbooks. Public comment and agency and tribal consultation resulted in yet another round of refinement and revision to the Merced River ORVs. Information used to evaluate the baseline condition of the ORVs included historic photos, maps, and archival materials; research studies and models of natural systems developed specifically for this planning effort; and the professional judgment of subject matter experts. External peer reviews were solicited for research conducted to inform the plan and to ensure that study findings were used appropriately.

All of this information was consolidated into the *Merced Wild and Scenic River Values Draft Baseline Conditions Report*. The report provides an assessment of river values at the time of the river's designation (1987) and represents the existing (or "baseline") condition of those values. This essential step in the planning process identified locations where management action was needed to improve conditions in the river corridor. The baseline condition assessment was used to inform the development of "River Values and Their Management" (Chapter 5) in the *Final Merced River Plan/EIS*.

To share these findings with the public, the NPS facilitated a series of workshops and associated webinars in Spring 2011. The workshops provided an opportunity for individuals to learn more about the conditions of the Merced River and the issues that needed to be addressed in the Merced River Plan. The *Merced Wild and Scenic River Values Draft Baseline Conditions Report* was then posted on the Park website at *http://www.nps.gov/yose/parkmgmt/mrp_documents.htm* and public review and comment was encouraged. All public comments received during this phase of the planning process were posted online in May 2011.

Step 3: Define Desired Condition, Adverse Impact, and Degradation for River Values

During the process of assessing river value conditions, the NPS determined the management standard for those values. The standards selected were based on research findings, monitoring results, the best professional judgment of subject matter experts, and current trends in the relevant academic and public land management fields. Additionally, specific thresholds were identified for mandatory management actions that are intended to keep river value conditions at or above the management standard (Chapter 5).

The NPS developed indicators for each river value's condition that are sensitive to change, as well as monitoring protocols needed to standardize data collection. By following these protocols, park managers will have early indications of changing conditions and be able to correct downward trends before they broach management standards. In some cases, a river value may not lend itself easily to monitoring. An example is "stair step river morphology," which is affected only by massive geologic forces that are well beyond human control. Consequently, the NPS did not define a management standard for river values of this type.

Step 4: Identify Management Concerns and Potential Corrective Actions

The Wild and Scenic Rivers Act and its implementing guidelines direct agencies to manage designated rivers to protect and enhance river values while allowing for public recreation and other resource uses, as long as

such use does not degrade river values. The Act further directs that primary emphasis be given to the river's esthetic, scenic, historic, archeologic and scientific features. A rigorous interdisciplinary process was used to ensure the protection of these primary emphasis values. This "primary scope evaluation" identified any management concerns or localized concerns for river values, as well as actions needed to correct these conditions.

To determine if management concerns or localized concerns were present, an intensive review of all river values was conducted. Scientific and geospatial data—including floodplain maps, remote sensing imagery, rock-fall hazard zone models and maps, and channel migration history—informed this review. All comments received during public scoping were reviewed for content useful to this effort. Finally, subject-matter experts used their knowledge of the river system to supplement and clarify the findings of the baseline conditions report prepared in Step 2.

Next, by comparing the actual river value condition to the management standard (defined in Step 3), the NPS obtained a clear picture of which values needed protective actions to arrest a downward trending condition. Due to the comprehensive and systematic nature of this evaluation, a host of localized areas of concern—places where action could be taken to enhance river values—were also identified.

Although some historic manipulation of the river corridor (for example, blasting the El Capitan Moraine) is irreversible, past impacts must be corrected to the extent possible. The "primary scope evaluation" described above was completed first to ensure that all alternatives would include the actions needed to protect and enhance river values, with special attention given to the river values in primary emphasis areas. The resulting comprehensive restoration program outlined in Appendix E is the foundation from which all alternatives were crafted. Many actions included in the restoration plan are common to Alternatives 2-6.

The next stage, or "secondary scope evaluation," pertained to issues related to visitor use, including recreation, traffic congestion, transportation infrastructure, and visitor experience. Transportation modeling identified the limitations associated with the existing road system design, as well as options for improving traffic flow. Various combinations of parking, overnight accommodations, camping, and services were packaged together to provide significantly different visitor experiences within the range of alternatives.

A summary of the primary and secondary scope issues, along with potential solutions, was developed and included in the *Merced Wild and Scenic River Planning Workbook* (fall 2011). The NPS conducted five workshops in conjunction with the release of the workbook to gather input on the range of potential options developed to protect and enhance river values. Comments on this workbook were posted on the Park website.

Step 5: Determine Size and Location of Necessary Facilities

Both WSRA and the 1982 *National Wild and Scenic River System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas* (Secretarial Guidelines) provide guidance on the level of development that is appropriate within different river segment classifications. In addition, the 2008 opinion of the U.S. Court of Appeals for the Ninth Circuit on the 2005 Merced River Plan questioned whether the level of development in some parts of the river corridor was protective of ORVs. As part of the planning process, the NPS evaluated all existing facilities and services within the river corridor to determine whether they should be retained, removed, or relocated to protect and enhance river values.

Locations where specific facilities or infrastructure were found to be causing concerns for river values are identified in "River Values and Their Management" (Chapter 5) and summarized in "Development of Lands and Facilities" (Chapter 7). Chapter 7 also contains the results of the process used by the NPS to determine whether the facilities and services located within the river corridor were necessary for public use. Redundant and underutilized facilities were targeted for removal under Alternatives 2-6. When feasible, facilities and services were also moved to locations outside of the river corridor. Facilities deemed necessary for public use were evaluated for impacts to river values and all identified concerns were addressed in the alternatives with specific management actions. Any additional development (or re-development) proposed in the alternatives was also evaluated for its necessity and potential impact to river values.

Step 6: Solicit Public Input on Organizing Themes for Alternatives

Before beginning the alternatives development process, park managers solicited public input for the plan. While public input is addressed in some of the foregoing steps, it is reported here as a separate step because it was foundational to the process used to develop the alternatives. Public input was solicited on a regular basis throughout the project, from the earliest public scoping period in 1999 through the preparation and release of the *Draft Merced River Plan/EIS.* Major topics discussed included the ORVs, their current condition and indicators to assess those conditions, user capacity, organizing concepts or themes for the alternatives, site plan concepts, and the preliminary alternatives themselves. Two planning workbooks were distributed for public review and comment (fall 2011 and spring 2012) prior to releasing the *Draft Merced River Plan/EIS* for public review in January 2013.

Step 7: Evaluate Operational and Financial Feasibility of Preliminary Alternatives

After the preliminary alternatives were completed, they were refined through several rounds of review and critiqued by park managers, field staff, resource experts, and the public. Planners examined all site proposals and management actions, ensuring that no unresolvable operational or logistical conflicts remained within individual alternatives. Cost estimates were developed for the alternatives, and subjected to further scrutiny from professional engineers and project managers.

Step 8: Establish User Capacities Consistent with Protection of River Values

During the early stages of the planning process, very high use (i.e., maximum capacity) scenarios were examined, some projected to result in over 25,000 visitors per day to Yosemite Valley. These scenarios produced unacceptable visitor densities at iconic attraction sites such as Yosemite Falls and Bridalveil Fall. Moreover, transportation modeling for Yosemite Valley showed that these use levels could only be accommodated by widening (or adding) roads, which would adversely impact the Biological ORV. This exercise established the numerical limit for user capacity in Yosemite Valley and helped to define the range of reasonable alternatives developed for the Merced River Plan.

Decisions about user capacity are embodied within a comprehensive set of management actions that are packaged together to form different alternatives in the plan. Given the interplay of resource protection measures, infrastructure placement and design, and type of visitor experience desired, the alternatives could be designed to bracket a wide range of user capacities while remaining consistent with the protection of river values. Chapter 6 provides a summary of the process used to determine user capacity and describes the

way in which the products generated at each stage of the planning process were used to accomplish this task.

Step 9: Revise Alternatives and EIS Following Public Review

The *Final Merced River Plan/EIS* has been developed through consultation with traditionally associated American Indian tribes and groups, the State Historic Preservation Officer, and other federal and state agencies. In addition, approximately 30,000 public comments were received on the *Draft Merced River Plan/EIS*. Appendix P includes responses to over 600 concern statements that were generated from the review of all public comments received on the *Draft Merced River Plan/EIS*. All told, the NPS conducted 66 public meetings, webinars, workshops, field visits, and open houses to listen to the public and gain their insight and perspective. At every stage of the planning process, the NPS has made changes in response to public feedback. The results are reflected in the agency's preferred alternative, presented later in this chapter.

How the Alternatives are Organized

The following sections include the detailed descriptions for six alternatives, including Alternative 1 (No Action). Components that are shared by alternatives have been packaged together as "Actions Common to Alternatives 2-6," for ease of reference and to avoid repeating this content in the description of each alternative. A complete alternative contains both these "common" actions and a set of actions unique to the alternative (Figure 8-2). The alternative descriptions are organized in sub-sections, as described below.

Overview

Each alternative description begins with an overview of the general theme of the alternative. The overview includes a summary of the visitor experience, restoration actions, user capacities, and land use and facilities proposals included in the alternative.

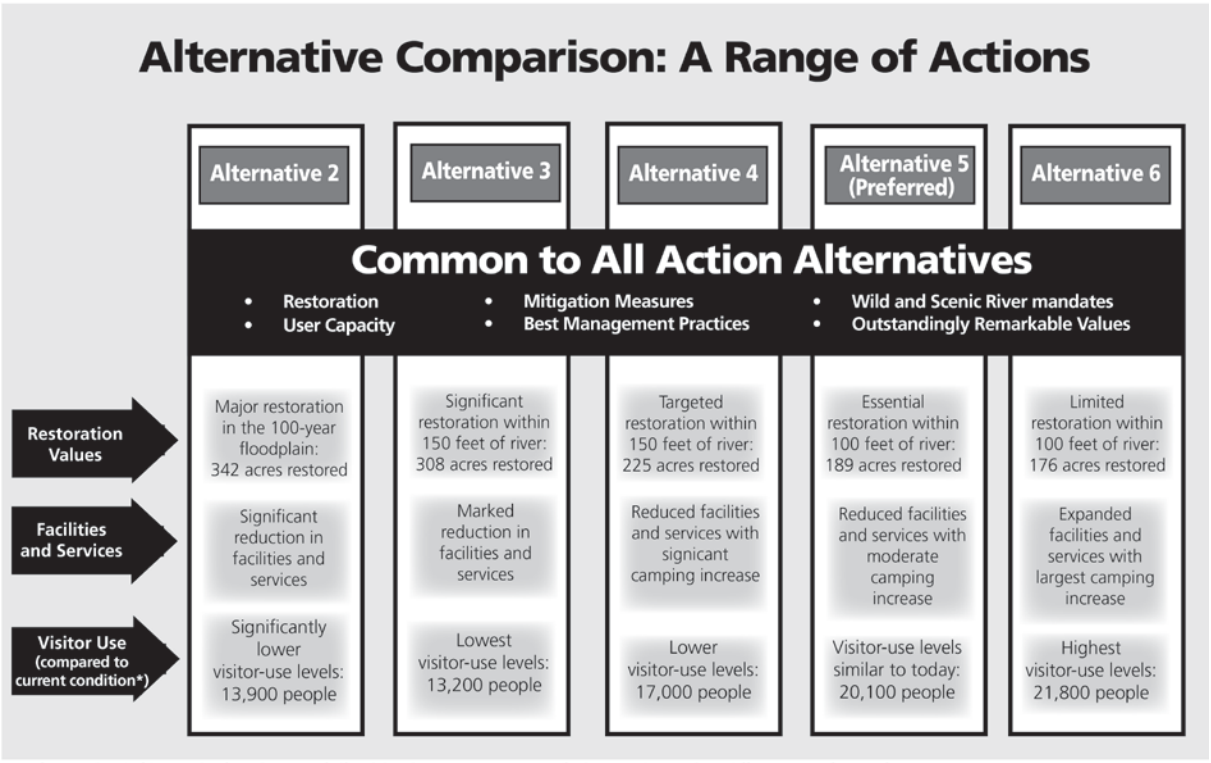
Maps

Maps of key locations in the Merced River Plan corridor follow the overview, to orient readers to the primary planning areas.

Detailed Description of Alternatives by Segment

The maps are followed by a more detailed description of the actions included in the alternative. These actions are grouped under two main topic areas: actions to Protect and Enhance River Values (e.g., biological values and cultural values) and actions related to User Capacities, Land Use and Facilities Management (e.g. camping, lodging, transportation). These topic areas are organized by segment.

Figure 8-2: Components of the *Final Merced River Plan/EIS* Alternatives



* Alternative 1 (No Action) estimates daily visitation at 20,900 people in East Yosemite Valley on peak-use days.

Conceptual Site Drawings

Conceptual site drawings and detailed planning area descriptions are included for the following locations: Curry Village, Yosemite Village Day-use Parking Area, Yosemite Lodge and Camp 4, Yosemite Valley Maintenance Area, and Wawona Maintenance Area. The illustrations show where facilities would be removed, relocated, or constructed, given the actions proposed in each alternative. They are included to give readers a general sense of the scale and location of visitor services envisioned under each alternative. The drawings do not represent a final proposal. Additional design and construction engineering must be completed before determining the precise location of all of the features within an individual design concept.

Comprehensive River Value Analysis

All action alternatives are consistent with the mandate in Section 10(a) of the Wild and Scenic Rivers Act to "protect and enhance the values which cause [the river] to be included in [the Wild and Scenic Rivers] system." This chapter concludes with a detailed assessment of how each alternative accomplishes this goal.

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ALTERNATIVE 1: NO ACTION ALTERNATIVE

Overview

Alternative 1 (No Action), is required by NEPA regulations to assess the environmental and socioeconomic impacts of continuing current management without additional provisions for protecting river values. Alternative 1 (No Action) also provides a baseline from which to compare the action alternatives. According to the Department of Interior's regulations for implementing NEPA, the No Action Alternative is defined as either "no project" or "no change" from "the current management direction or level of management intensity" (43 C.F.R. Section 46.30). Alternative 1 (No Action) is based on "current guiding management documents." It assumes that trends in the condition of natural and cultural resources and visitor experiences in the Merced River corridor would be shaped by currently approved plans without further revision. Actions that require additional planning and environmental compliance are not considered part of the No Action Alternative.

The 1980 *General Management Plan,* as amended by the *Concessions Services Plan* (1992), is the current primary guiding document for park management. Other parkwide guidance can be found in the *Wilderness Management Plan* (1989), *Fire Management Plan* (2004, with operational updates in 2009), and the *Invasive Plant Management Plan* (updated in 2010). The NPS would also continue to comply with all federal laws, including the Organic Act, the Endangered Species Act, the National Historic Preservation Act, the Clean Water Act, directives, policies, and executive orders pertaining to park management.

Under Alternative 1(No Action), the NPS would not adopt a comprehensive management plan to protect and enhance river values and address user capacity and land use in the corridor. The two prior versions of the river plan would not be in effect because those plans were invalidated by the U.S. Court of Appeals for the Ninth Circuit in 2004 and 2008 respectively. Alternative 1 (No Action) would not satisfy the legal requirement to adopt a valid comprehensive river management plan for the Merced River Corridor.

The river corridor would be one-quarter mile on either side of the ordinary high-water mark because the WSRA provides for these default boundaries in the absence of agency-designated boundaries. The segment classifications would be the same as those in the 1982 National Rivers Inventory in which the river was designated wild and scenic. There would be no Section 7 Determination Process. The Outstandingly Remarkable values would remain as articulated in Yosemite's *1996 Draft Yosemite Valley Housing Plan*, with limited opportunities to enhance or improve upon their condition.

Ecological restoration actions would be limited to those that would require only a Categorical Exclusion in compliance with NEPA, and those identified in the 2009 Settlement Agreement. There would be no changes to existing facilities, transportation systems or services and no established limit to the number of visitors or vehicles that would be allowed within the corridor. Park managers would continue to use an informal, labor-intensive approach to traffic management and parking.

Actions to Protect and Enhance River Values

This section is intended to summarize the scope of the actions that could be taken by NPS to protect and enhance river values. It is not intended to summarize the entirety of resource management in the river corridor; rather, the intent is to identify and describe ongoing management activities affecting only the outstandingly remarkable values of the Merced River. The limited program described below stands in sharp

contrast to the robust program of protection provided under Alternatives 2-6. Under Alternative 1(No Action), the management concerns and localized concerns identified in Chapter 5 would persist for several river values. See the "Detailed Description of Alternative 1" for more information on river value conditions under this alternative.

Free-Flowing Condition

Impediments to free flow and their associated impacts would continue in all segments.

Water Quality

Water quality would continue to be monitored and managed to meet NPS standards, which are higher than state water quality standards.

Biological Values

Under Alternative 1 (No Action), ecological restoration actions would be limited to those requiring a categorical exclusion for NEPA compliance and actions authorized in the 2009 Settlement Agreement. The Settlement Agreement specifies that the NPS could proceed with limited restoration actions at the El Portal Greenemeyer sand pit; drainage improvements at Bridalveil, Cook's, and El Capitan Meadows; planning for the comprehensive restoration of El Capitan Meadow; and riverbank restoration at North Pines Campground. Riverbank restoration at North Pines Campground would be limited to planting willows and alders along approximately 300 linear feet of riverbank, using a bobcat or small excavator to move rocks for planting; planting herbaceous plants on the terrace; and mulching with native leaves and duff. Small-scale riverbank restoration projects that could be completed under a categorical exclusion in compliance with NEPA compliance would also occur.

The NPS would continue invasive species control where such plants are present, as well as conifer removal from some meadows. Some ecological restoration at North Pines Campground and Cook's Meadow has already occurred and is listed under cumulative effects (Appendix B). Table 8-1 lists representative examples of ecological restoration actions in the Merced Wild and Scenic River corridor that would take place under Alternative 1 (No Action).

TABLE 8-1: EXAMPLES OF ACTIONS TO PROTECT AND ENHANCE BIOLOGICAL VALUES - ALTERNATIVE 1 (NO ACTION)

Yosemite's Existing Ecological Restoration Program	
Ecological restoration actions assist the recovery of damaged ecological systems with the aim to bring damaged systems back to a condition that is structurally and functionally similar to the pre-disturbance state. Restoration takes place on a case-by-case basis, in compliance with the 2009 Settlement Agreement. Any action taken will comply with NEPA and other laws and policies.	
• Re-routing trails out of sensitive areas	Example: Move established trails farther from the river Example: Add boardwalks across sensitive meadow habitat Example: Restore informal trails to avoid crossing sensitive areas
• Removing abandoned infrastructure	Example: Remove outdated utility infrastructure to restore a wetland's hydrology and connectivity to adjacent riparian floodplain Example: Remove an old building foundation and bring in topsoil to allow for native plant establishment
• Repairing damaged riverbanks	Example: Fence highly eroded riverbanks Example: Plant willows to stabilize riverbanks
Monitoring: An essential component in any restoration project is to monitor completed projects to ensure that project goals are met.	

Cultural Values

Under Alternative 1 (No Action), park staff would continue to identify, document, monitor, evaluate, and protect significant archeological sites in consultation with traditionally-associated American Indian tribes and groups. This would be accomplished through monitoring for changing site conditions, developing and implementing treatment measures, implementing visitor and employee education, and conducting research.

However, some resource impacts related to visitor and administrative use in all segments would continue to be present. Undertakings with potential to impact archeological and ethnographic resources and activities would be subject to review and compliance with the National Historic Preservation Act and consultation with the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and traditionally associated American Indian tribes and groups.

Scenic Values

Additional NEPA compliance would be required before the NPS could proceed with any actions proposed in the *Scenic Vista Management Plan* that are located within the Merced River corridor.

Recreational Values

The NPS would conduct operations and maintenance activities, correct accessibility deficiencies and carry out all other activities necessary to address the daily, routing, and intermittent operational requirements of the Park, as long as such operations and activities would not influence or predetermine the types, levels and location of uses, and were in full compliance with NEPA. No changes would be made to the transportation system and or number and type of lodging and camping units currently provided.

User Capacities, Land Use and Facilities Management

Alternative 1 (No Action) would continue to provide visitor services similar to those existing today. User capacities would remain at current levels (Table 8-2).

Under Alternative 1 (No Action), the current approach to user capacity management would continue. This includes the wilderness permit system for overnight use of the backcountry, and reservation systems for camping and lodging. Day-use would continue to be managed by traffic management staff directing visitor parking to maximize the capacity of existing day-use lots. During peak season, traffic staff would also manage pedestrian-vehicle conflicts at key intersections and divert traffic away from the Valley at the El Capitan Crossover when cars began to back up in East Valley.

The NPS would continue pilot transit programs to test the feasibility of providing additional limited service to destinations within the river corridor and Yosemite Valley.

TABLE 8-2: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 1 (NO ACTION)

	Unit Type	Units	People
Wilderness Above Nevada Fall			
Visitor Overnight Use	Zone Capacities & Beds	380	380
Visitor Day Use	Day Hikers	125	125
Employee Housing (in camps)	Employee Beds	25	25
Administrative Day Use	Day Patrols	5	5
Yosemite Valley			
Visitor Overnight Use	Rooms & Campsites	1,500	6,564
Visitor Day Use	Parking Spaces & Buses	-	11,752
Employee Housing	Employee Beds	1,315	1,315
Administrative Day Use	Parking Spaces	166	332
Gorge			
Visitor Overnight Use	Rooms & Campsites	-	-
Visitor Day Use	Parking Spaces	180	869
Employee Housing	Employee Beds	9	9
Administrative Day Use	Parking Spaces	2	4
El Portal			
Visitor Overnight Use	Rooms & Campsites	-	-
Visitor Day Use	Parking Spaces	214	740
Employee Housing	Employee Beds	220	427
Administrative Day Use	Parking Spaces	610	1,220
South Fork Above Wawona			
Visitor Overnight Use	Permits	20	20
Visitor Day Use	Day Hikers	6	6
Employee Housing	Employee Beds	-	-
Administrative Day Use	Day Patrols	1	1
Wawona			
Visitor Overnight Use	Rooms & Campsites	203	865
Visitor Day Use	Parking Spaces	-	1,295
Employee Housing	Employee Beds	121	121
Administrative Day Use	Parking Spaces	30	60
South Fork Below Wawona			
Visitor Overnight Use	Backpackers	-	-
Visitor Day Use	Day Hikers	6	6
Employee Housing	Employee Beds	-	-
Administrative Day Use	Day Patrols	1	1

Visitor Overnight Capacity

Camping

Under Alternative 1 (No Action), campgrounds in the Merced Wild and Scenic River corridor, including Yosemite Valley, would remain in their current location and configuration, and at their current capacity. The total camping inventory in the corridor under Alternative 1 (No Action) would be 565 campsites accommodating up to 3,510 people per night.

Table 8-3 identifies the existing campground locations in the river corridor and the number of sites at each location.

TABLE 8-3: CAMPING FACILITIES – ALTERNATIVE 1 (NO ACTION)

Existing Locations	Alt 1 (No Action)
Segment 2: Yosemite Valley	
Backpackers Campground	25 walk-in sites
Camp 4 Campground	35 walk-in sites
Lower Pines Campground	76 sites
North Pines Campground	86 sites
Upper Pines Campground	240 sites
Yellow Pine Administrative	4 group sites
Segment 7: Wawona	
Wawona Campground	99 sites (including one group site and two stock-use sites)
Total Camping in Corridor	565 sites

Lodging

Under Alternative 1 (No Action), lodging facilities in the Merced Wild and Scenic River corridor, including Yosemite Valley, would remain in their current location and configuration, and at their current capacity. The total lodging inventory in the corridor under Alternative 1 (No Action) would be 1,263 units accommodating up to 4,320 people per night (Table 8-4).

TABLE 8-4: LODGING – ALTERNATIVE 1 (NO ACTION)

Existing Locations	Alt 1 (No Action)
Segment 1: Wilderness	
Merced Lake High Sierra Camp	22 units (60 beds)
Segment 2: Yosemite Valley	
Ahwahnee Hotel	123 rooms
Housekeeping Camp	266 units
Curry Village	400 units
Yosemite Lodge	245 rooms
Segment 7: Wawona	
Wawona Hotel	104 rooms
Total Lodging in Corridor	1,263 units

Parking Inventory and Access Improvements

Under Alternative 1 (No Action), no changes would be made to the current configuration of parking and transportation infrastructure. During peak-use periods, parking demand would frequently exceed the designated parking supply, and the excess number of vehicles searching for parking would continue to impact the transportation circulation system, contributing to traffic congestion and crowding. Under these conditions, traffic management personnel would respond to traffic circulation, flow, and parking problems as they developed. Such responses would include temporary traffic diversions and initiation of emergency vehicle lanes to provide for visitor safety and emergency response. Collectively, ad hoc traffic management actions (the El Capitan Traffic Diversion, emergency lane closures, directed parking at lots, and traffic management at pedestrian crossings) would continue to be stop-gap measures to control impact and avoid gridlock; but traffic and parking conditions during peak hours of visitation would continue to be poor.

Because many of the locations currently used for parking are not delineated, existing vehicle counts were used to estimate the supply of parking currently available. Using this approach, under Alternative 1

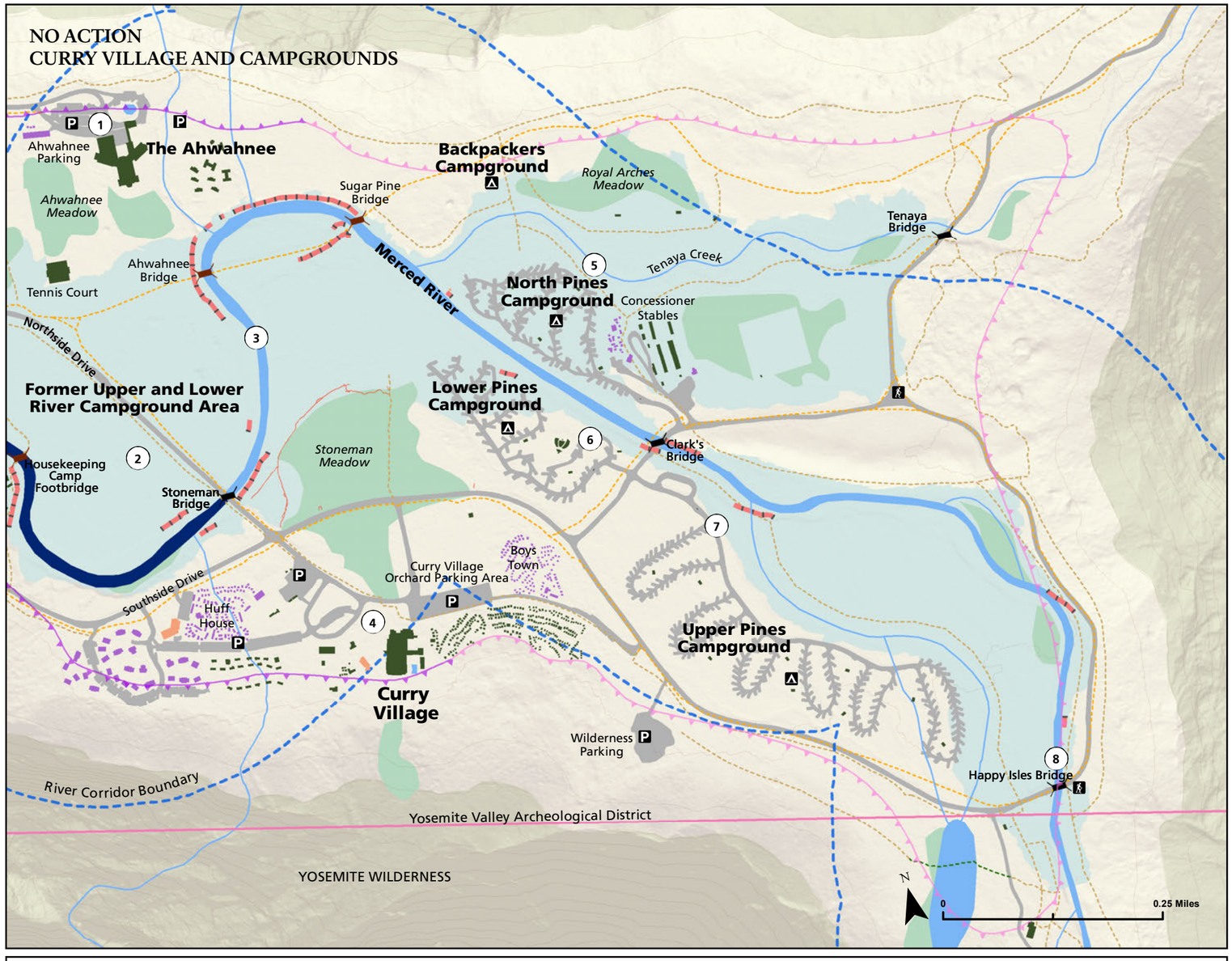
(No Action), the current supply of day-use parking in Yosemite Valley is estimated at 2,337 spaces (Table 8-5). This figure includes vehicles that were, technically, parked improperly and in areas that were not originally designed or intended for this use. The ***total*** parking inventory in East Yosemite Valley (including day, overnight, and administrative uses) would be approximately 5,200 spaces.

Under Alternative 1 (No Action), transit would continue to be provided to and around Yosemite Valley using a combination of free shuttle bus service, regional transit, and private tour buses. Under Alternative 1 (No Action), public transit options would include existing routes and limited pilot programs to test the viability of expanding transit to and from additional locations.

TABLE 8-5: DAY-USE PARKING AREAS – ALTERNATIVE 1 (NO ACTION)

Location	Alt 1 (No Action)
Segment 2: Yosemite Valley	2,337 spaces
Segment 3: The Gorge	180 spaces
Segment 4: El Portal	214 spaces
Segment 7: Wawona	290 spaces
Total Parking	3,021 spaces

ALTERNATIVE 1: NO ACTION



Legend

- Parking Area
- Campground
- Ranger Station
- Picnic Area
- Trailhead
- 100 ft. Contour
- Revetment
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Informal Trail
- Valley Loop Trail
- Bike Path
- Boardwalk
- Trail
- 100-year Floodplain
- Meadow & Riparian Vegetation
- Sierra Sweet Bay Vegetation
- Surfaced Area
- Designated Wilderness
- Archeological District
- Housing
- Management Activities & Services
- Visitor Based Activities & Services
- Recreational Segment
- Wild Segment
- Scenic Segment
- Stream
- Merced River (Rafting Prohibited)
- Merced River (Rafting Permitted)

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

1. The Ahwahnee
   - Ahwahnee Meadow Former Golf Course and Tennis Court: Meadow and oak habitats around The Ahwahnee would continue to contain ditching, fill material, encroaching conifers and abandoned infrastructure.
   - Ahwahnee Hotel Parking: Parking at The Ahwahnee would not meet overnight and day-use demand, and the historic gate house would not be restored.
   - Ahwahnee Hotel Services and Facilities: The National Historic Landmark would have 123 lodging units and provide visitor services, including food service, dining, bar, gift shop, sweet shop and pool.

2. Former Upper and Lower River Campground
   - Former Upper and Lower River Campground: This area, which is critical to the hydrologic connectivity between Ahwahnee and Stoneman meadows, and once contained 262 campsites before the 1997 flood, would continue to passively restore to natural conditions.

3. River Reach Between Clark's and Sentinel Bridge
   - River Reach Between Bridges: Between Clark's and Sentinel bridges, the river channel would continue to lack channel complexity and be shallower and wider than naturally would occur.

4. Curry Village Area
   - Residential Area: Temporary accommodations at Huff House would continue to house concessioner employees.
   - Curry Village Lodging: There would be 400 guest units. This includes 311 canvas tent cabins (91 of which are in Boys Town) 57 cabins-without-baths, 18 units in Stoneman Cottage, and 14 cabins-without-baths.
   - Stoneman Meadow: Ditching, roads, and informal trails would remain in Stoneman meadow.
   - Curry Orchard Parking Area: The parking lot would be unimproved and contain 424 parking spaces.
   - Curry Village Services and Facilities: The facilities and services would be unchanged. The grocery store, pizza deck and bar, pavilion, swimming pool, bike stand, raft rental, Happy Isles Snack Stand, and the Nature Center at Happy Isles would continue to provide visitor services.
   - Curry Village Wilderness Parking Area: The parking lot would be unimproved and contain 190 parking spaces.

5. North Pines and Backpackers Campground Area
   - Backpackers Campground: There would be 25 sites in close proximity to Tenaya Creek.
   - Royal Arches Meadow: The meadow would contain tiles, pipes and conifer saplings, as well as the remains of a former road bed.
   - North Pines Campground: There would be 86 campsites.
   - Concessioner Stables in Yosemite Valley: The stables would be used by the concessioner to provide day rides in the Valley and house stock animals used to operate the High Sierra camps. The kennel service would continue to operate.
   - Valley Campgrounds: Campsites would remain in close proximity to the river, without formal designated river access points.
   - Eroded Riverbanks: Heavy visitor use of the riverbanks along some river reaches would continue, leading to denuded areas and accelerated riparian erosion.

6. Lower Pines Campground Area
   - Western Portion of Lower Pines Campground Loop: The closed portion of Lower Pines campground, damaged by the 1997 flood, would continue to passively restore. Compacted soils and fill material would remain.
   - Lower Pines Campground: There would be 76 campsites.

7. Upper Pines Campground Area
   - Upper Pines Campground: There would be 240 campsites.
   - Upper Pines RV Dump Station: The dump station would remain in close proximity to the river.

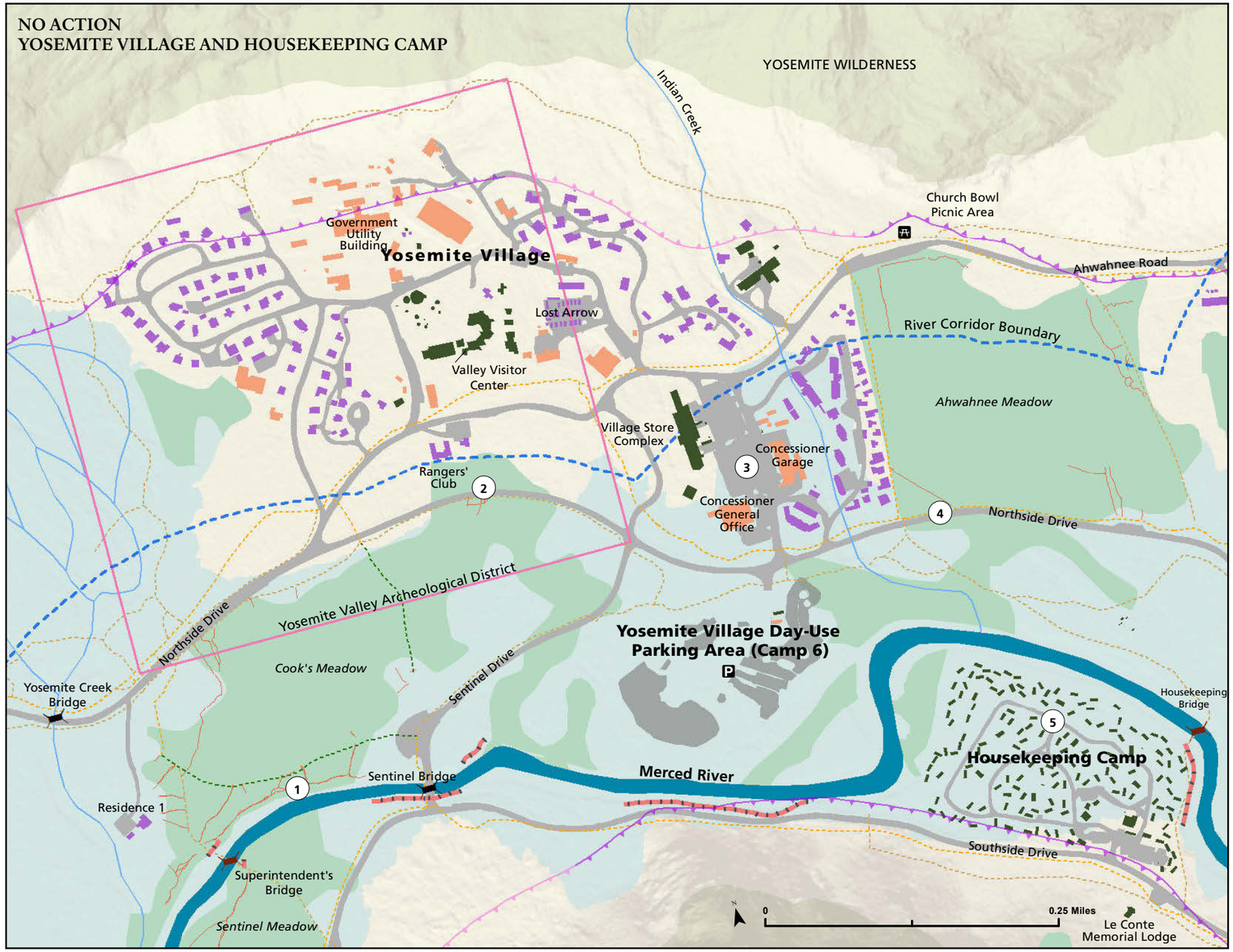
8. Happy Isles Area
   - Happy Isles: Inadequate way-finding and unclear pedestrian circulation would continue, contributing to vegetation trampling.
   - Happy Isles Road Bridge, Stoneman, Clark's, Ahwahnee and Sugar Pine Bridges: The historic bridges would continue to have footings within the bed and banks of the Merced River, constricting the hydrologic flow of the river. The berm connecting the Ahwahnee and Sugar Pine Bridge would remain.
   - Pack Stock Trail: Trail from Concessioner Stables to Happy Isles would continue to be within the bed and banks of the river, subject to seasonal flooding, accelerated erosion, and sediment deposition in the river.

Scenic Vista Management: Conifers would continue to impinge views of iconic viewpoints and locations.

Cultural Resources: Informal and formal trails, pack stock trails, stock use and operational staging, vehicles and bicycles, camping, illegal campfires, graffiti, and trash would continue to impact culturally sensitive areas.

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ALTERNATIVE 1: NO ACTION



Legend

- Parking Area
- Campground
- Ranger Station
- Picnic Area
- Trailhead
- 100 ft. Contour
- Revetment
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Informal Trail
- Valley Loop Trail
- Bike Path
- Boardwalk
- Trail
- 100-year Floodplain
- Meadow & Riparian Vegetation
- Sierra Sweet Bay Vegetation
- Surfaced Area
- Designated Wilderness
- Archeological District
- Housing
- Management Activities & Services
- Visitor Based Activities & Services
- Recreational Segment
- Wild Segment
- Scenic Segment
- Stream
- Merced River (Rafting Prohibited)
- Merced River (Rafting Permitted)

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Superintendent's and Sentinel Bridge Areas
   - Superintendent's and Sentinel Bridges: The bridges would continue to have footings within the bed and banks of the Merced River.
   - Southside Drive Intersection: The three-way intersection at Sentinel Drive and Southside Drive would remain.

2. Cook's Meadow Area
   - Informal Shoulder Parking Along Meadows and Sensitive Habitat: Informal parking would continue along meadow edges and sensitive habitats at Cook's Meadow.
   - Cook's Meadow Abandoned Roadbed: The old roadbed north of Northside Drive between the Rangers' Club and the three-way stop would remain in meadow habitat.

3. Yosemite Village
   - Way-finding from the Yosemite Village Day-use Parking Area: Visitors would continue to have difficulty finding the Village visitor center from the Camp 6 day-use parking area.
   - Yosemite Village Day-Use Parking Area: This parking area would continue to be an unimproved parking lot in close proximity to the river (portions in the 5- and 10-year floodplain). Approximately 517 vehicles would be accommodated. The Yosemite Village parking lot would continue to have approximately 237 parking spaces.
   - Concessioner General Office Building: The Concessioner General Office would remain in the river corridor and the 100-year floodplain.
   - Lost Arrow: Concessioner employees would continue to be housed in these temporary accommodations.
   - Intersections: The three-way intersection at Sentinel Drive and Southside Drive would remain, and the offset four-way intersection at Village Drive and Northside Drive (Camp 6) would remain.
   - Yosemite Village Services and Facilities: The level of services and facilities offered in Yosemite Village would remain unchanged.
   - Valley Garage: The Valley Garage, located in the river corridor and 100-year floodplain, would continue to service shuttles, tour buses, and visitor and concessioner vehicles.
   - Concessioner Employee Housing: Tecoya and Ahwahnee Row employee housing would continue to house concessioner employees.

4. Ahwahnee Meadow Area
   - Ahwahnee Meadow: Northside Drive, the adjacent bike path and other formal trails would continue to bisect the meadow.
   - Ditches in Meadows: Human-constructed ditches would remain in meadows throughout Yosemite Valley.

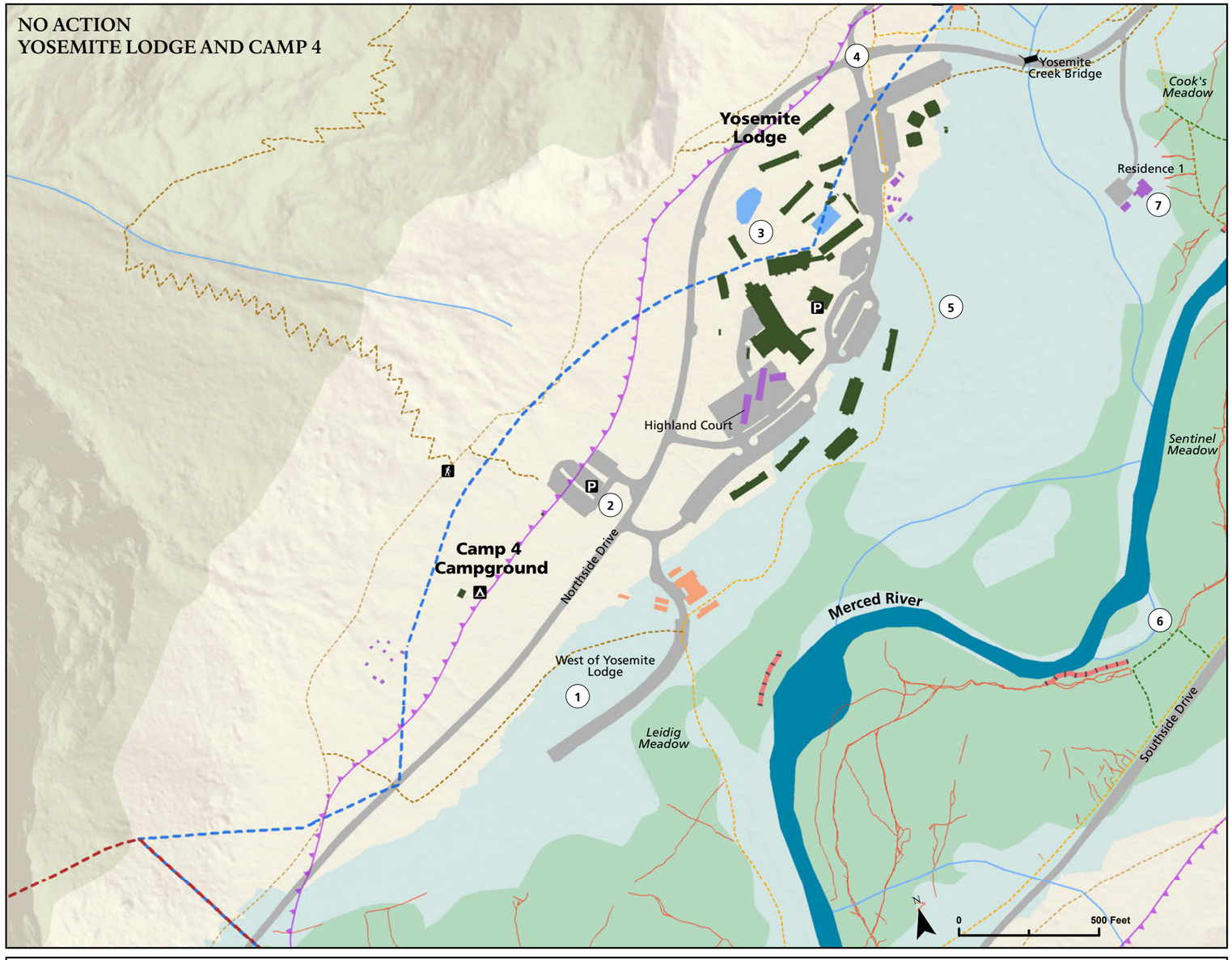
5. Housekeeping Camp Area
   - Housekeeping Camp Lodging: Many of the 266 Housekeeping Camp lodging units would continue to exist in the 2- to 10-year floodplain. The riprap that armors the riverbank to protect this infrastructure would be retained. High visitor use in this area would continue to result in denuded riverbanks in some areas.
   - Housekeeping Camp Services and Facilities: Visitor-use facilities would remain unchanged. Services would include shower houses, restrooms, laundry, and groceries.

Scenic Vista Management: Scenic Views: Conifers would continue to impinge views of iconic viewpoints and locations.

Cultural Resources: Informal trails and rock-climbing activities impact culturally sensitive areas. The LeConte Memorial Lodge National Historic Landmark would remain in "fair" condition.

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ALTERNATIVE 1: NO ACTION



Legend

- Parking Area
- Campground
- Ranger Station
- Picnic Area
- Trailhead
- 100 ft. Contour
- Revetment
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Informal Trail
- Valley Loop Trail
- Bike Path
- Boardwalk
- Trail
- 100-year Floodplain
- Meadow & Riparian Vegetation
- Sierra Sweet Bay Vegetation
- Surfaced Area
- Designated Wilderness
- Archeological District
- Housing
- Management Activities & Services
- Visitor Based Activities & Services
- Recreational Segment
- Wild Segment
- Scenic Segment
- Stream
- Merced River (Rafting Prohibited)
- Merced River (Rafting Permitted)

EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

1. West of Yosemite Lodge
   - West of Yosemite Lodge: The west of Yosemite Lodge area would continue to provide over flow parking for tour buses and transit buses, day use and overnight use. The area was formerly employee housing prior to the 1997 flood.
   - Bike Path: The bike path through Leidig Meadow would remain in close proximity to the river and be inundated during parts of the year.
   - River Access: There would continue to be no designated river access point for visitors.
   - Former Yosemite Lodge Cabins: Fill and compacted soils would remain in the former cabins area, which were removed following the damage of the 1997 flood.

2. Camp 4 Area
   - Camp 4 Shuttle Stop: Camp 4 shuttle stop would remain an informal shuttle stop.
   - Camp 4 Campground: Camp 4 would have 35 campsites.
   - Camp 4 Parking: The unimproved parking lot at Camp 4 would contain 89 parking spaces.

3. Yosemite Lodge Area
   - Yosemite Lodge: There would be 245 lodging units. Yosemite Lodge would continue to be used for overnight lodging, parking, and food service. There would be no change to the level of service and facilities; services would include post office, pool, bicycle rental and snack stand. Buildings would remain within the 100-year floodplain.
   - Concession Employee Housing at Yosemite Lodge: Concessioner employees would continue to be housed at the Thousands Cabins and in temporary accommodations at Highland Court.
   - Day-use Parking Demand: Demand for day-use parking would continue to exceed supply during summer peak-use periods.

4. Yosemite Lodge Intersection at Northside Drive
   - Yosemite Lodge Intersection: Traffic congestion resulting from visitors using the on-grade pedestrian crossing at Northside Drive to get to Yosemite Falls would continue.

5. Former Pine and Oak Area
   - Former Pine and Oak cabins at Yosemite Lodge: The former Pine and Oak cabins area, removed following damage sustained from the 1997 flood, would continue to passively restore. Nonnative fill soils, soil compaction and an abandoned road network would remain.

6. Sentinel Meadow
   - Sentinel Meadow Trampling: Sentinel meadow would continue to receive visitor use impacts.

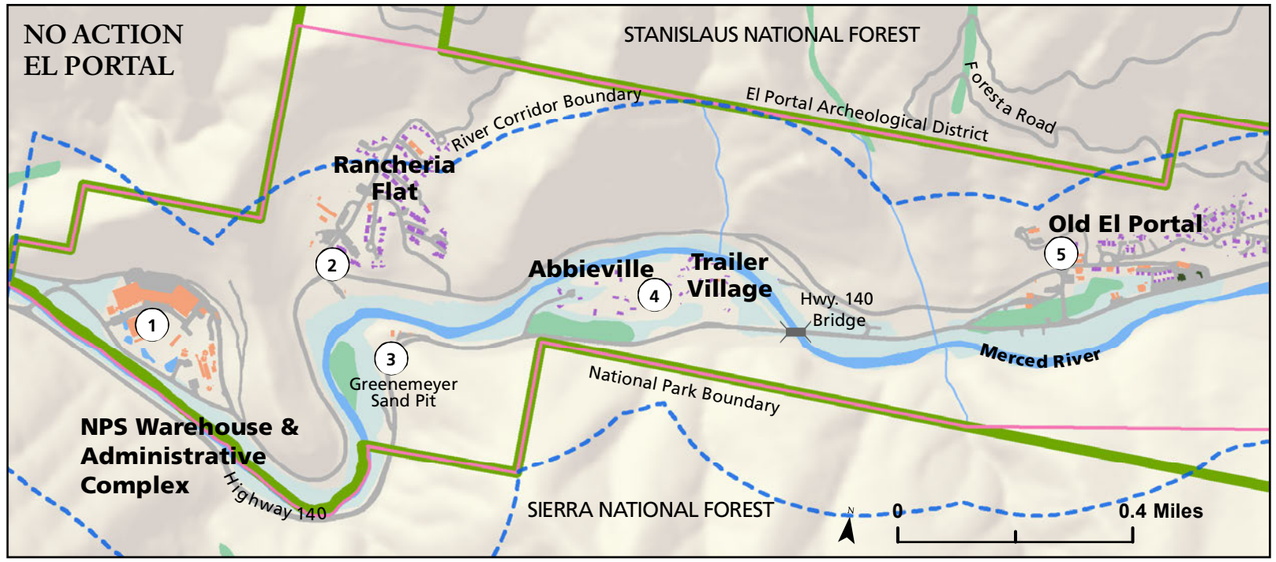
7. Residence 1
   - Residence 1: This historic structure, also known as the Superintendent's House, would continue to be subject to recurring flooding and subsequent water damage. The poor condition of the historic interior finishes of the Superintendent's House and structural issues related to settling of the foundation would remain. Visitor use in this area would continue to cause radiating informal trails in Cook's Meadow.

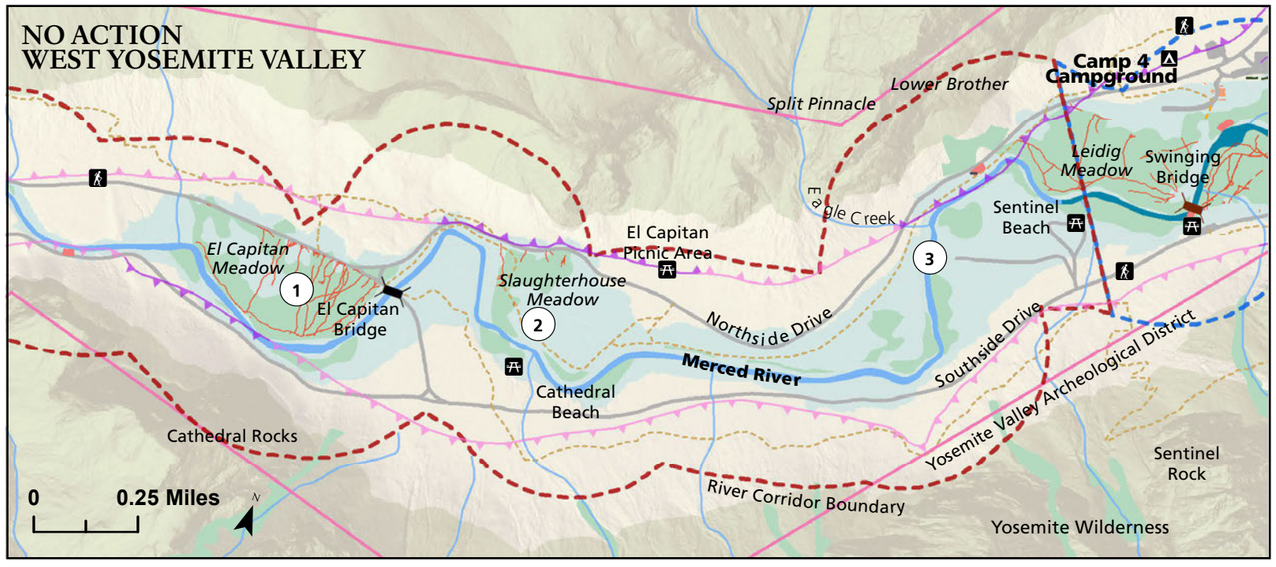
Scenic Vista Management: Conifers would continue to impinge views of iconic viewpoints and locations.

Cultural Resources: Non-technical climbing on a large bedrock mortar (pounding rock) near Lower Yosemite Falls would continue to cause impacts to the archeological resource.

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ALTERNATIVE 1: NO ACTION





Legend

- Parking Area
- Campground
- Ranger Station
- Picnic Area
- Trailhead
- 100 ft. Contour
- Revetment
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- Wild Segment
- Scenic Segment
- Stream
- Merced River (Rafting Prohibited)
- Merced River (Rafting Permitted)

EL PORTAL

1. Roadside Parking at the NPS Administrative Complex: Off-street parking between the Merced River and Foresta Road would continue to lack design features to prevent water contamination from automotive fluids, surface water runoff, or sediment transport.

2. Employee Housing at Rancheria Flat: Vacant lots would continue to exist in the Rancheria Flat area of El Portal.

3. Greenemeyer Sand Pit: This former mine operation area would continue to contain fill material that precludes natural flooding and regeneration of riparian plants.

4. Abbieville and Trailer Village
   - Housing: This area, located outside the 100-year floodplain, would continue to occupy a large development footprint and provide for housing land use for temporary NPS employees and park partner employees. 36 private residences would remain.
   - Riparian Zone: Development, including paved roads, parking and compacted soils, would continue to exist in the riparian zone.

5. Old El Portal
   - Valley Oak Restoration: The valley oak population at El Portal would continue to exist in a generally protected state, but oak seedling recruitment would be limited by competition from invasive species, parking under the drip lines of trees and associated soil compaction, herbivory, and existing development.
   - Odger's Fuel Storage Facility: Presence of this facility in the floodplain would continue to be non-complaint with NPS Floodplains Guidelines that require fuel storage facilities to be located outside of the 500-year floodplain.
   - Residential Area: Nine vacant lots would continue to exist in Old El Portal.

Cultural Resources: Informal trails, gravel roads, abandoned infrastructure, and visitor use would continue to impact culturally sensitive areas.

WEST YOSEMITE VALLEY

1. El Capitan Meadow and Devil's Elbow
   - Valley Meadows: Conifers would continue to encroach into Yosemite Valley meadows.
   - Upstream of El Capitan Moraine: The river reach upstream of the El Capitan moraine to the Sentinel picnic area would continue to lack channel complexity and large wood accumulation.
   - El Capitan Meadow: Soil compaction and trampled vegetation would continue to exist due to informal trails and easy access to the meadow from roadside parking. The NPS would continue to remove invasive non-native plants following the Invasive Plant Management Plan and continue with prescribed fire following the Fire Management Plan, including mechanical removal of conifer saplings to reduce fuel load.
   - El Capitan Bridge, River access: No formal designated river access would be established along a high visitor use stretch of river with sensitive riverbanks.
   - El Capitan Shuttle Stop: The shuttle stop in this area would remain an informal shuttle stop.

2. Devil's Elbow and Slaughterhouse Meadow Area
   - Devil's Elbow: Visitor use between El Capitan Bridge and Devil's Elbow would continue to exceed the design of existing infrastructure. Visitor parking and river access would continue to create safety and resource concerns.
   - Valley Loop Trail impacts through meadows: The Valley Loop Trail would continue to pass through sensitive and sometimes inundated meadow habitat in Slaughterhouse Meadow and Bridalveil Meadow.
   - Cathedral Beach Picnic Area: Visitor use would continue to exceed the design of the existing infrastructure in this picnic area. There would be no formal river access and the parking would not be delineated. Picnic benches would continue to be easily moved throughout the area.

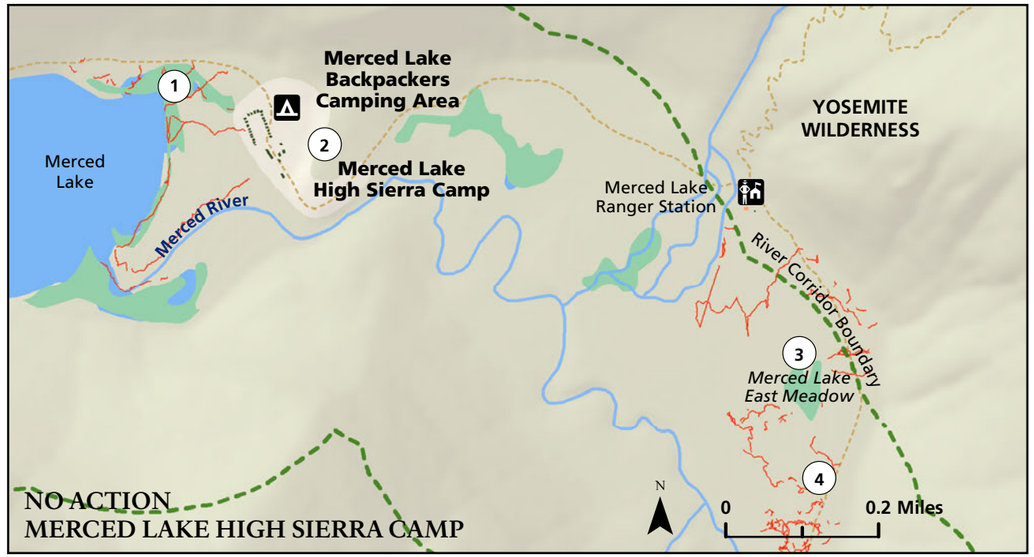
3. Sentinel Beach and Swinging Bridge
   - Eagle Creek meadow and drainage: The Eagle Creek/Rocky Point sewage plant infrastructure would remain underground in Eagle Creek meadow. The natural braided morphology of Eagle Creek would continue to be channelized near Northside Drive.
   - Yellow Pine Administrative: Yellow Pine Campground would continue to be available for administrative use (four group sites for up to 120 people.)
   - Sentinel Beach Picnic Area: The picnic area would continue to be affected by high visitor use that exceeds the design of the existing infrastructure.
   - Leidig Meadow: Informal trailing in Leidig meadow would continue to cause extensive levels of habitat fragmentation, particularly in the area surrounding the north side of Swinging Bridge.
   - Valley Swinging Bridge river access: Current fencing along the bike path would continue to lead people to access the river upstream, river right of Swinging Bridge, causing streambank erosion.

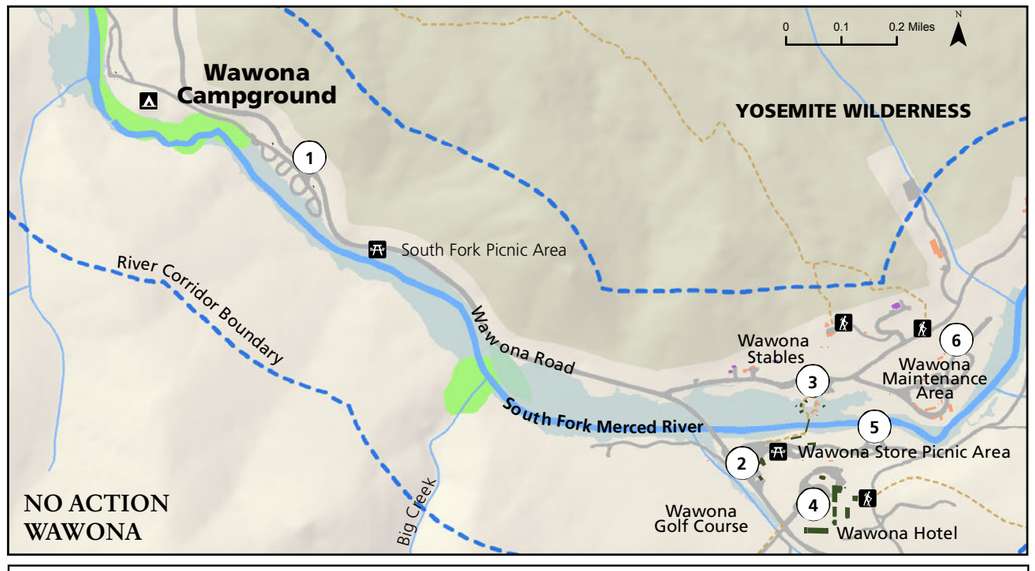
Scenic Vista Management: Trees would continue to impinge views of iconic viewpoints and locations.

Cultural Resources: Informal trails, rock climbing, camping, vandalism, human waste and fire rings, would continue to impact culturally sensitive areas.

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ALTERNATIVE 1: NO ACTION





Legend

- Parking Area
- Campground
- Ranger Station
- Picnic Area
- Trailhead
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MERCED LAKE HIGH SIERRA CAMP

1. Merced Lake Shore Meadow: Informal trails would continue to exist in Merced Lake Shore Meadow, adjacent to the Merced Lake High Sierra Camp.

2. Merced Lake High Sierra Camp and Merced Lake Backpackers Camping Area
   - Merced Lake Backpackers Camping Area: Infrastructure at the camping area would include a water system with flush toilets and bear boxes for food storage. This would remain a designated camping area for the Merced Lake Wilderness Zone.
   - Merced Lake High Sierra Camp: The High Sierra Camp would continue to have 22 lodging units (60 beds) and a water system with flush toilets.

3. Merced Lake Ranger Station Meadow: The meadow would continue to have high levels of bare ground associated with administrative pack stock grazing.

4. Special-Status Plants: Trails through sensitive habitats would continue to impact fragile plant species in several places in the river corridor.

OTHER SEGMENT 1 CAMPING AREAS (NOT SHOWN ON MAP)

- Little Yosemite Valley Camping Area: Infrastructure at the camping area includes a composting toilet and bear boxes for food storage. This would remain a designated camping area for the Little Yosemite Valley Wilderness Zone.
- Moraine Dome Camping Area: This area would remain as a designated camping area for the Little Yosemite Valley Wilderness Zone.

WAWONA

1. Wawona Campground and South Fork Picnic Area
   - Wawona Campground would contain 97 campsites (96 individual sites and 1 group site) and would continue to be served by septic tanks and leach fields.
   - The South Fork Wawona picnic area would continue to be undelineated and have no designated river access.

2. Wawona Store Area
   - Roadside parking on Wawona Road would continue to create vehicle/pedestrian conflicts and associated traffic congestion.
   - The Wawona Store parking facility would not accommodate parking demand.
   - The restrooms, existing numbers of picnic tables, and parking spaces would continue to serve visitors in their present condition and configuration. There would be no formal river access point from the picnic area to the river.

3. Wawona Stables: The concessioner would continue to provide day rides originating from the Wawona Stables.

4. Wawona Hotel Complex
   - The hotel would continue to have 104 lodging units, providing overnight guests with a swimming pool and tennis courts.
   - A nine-hole golf course, associated with the hotel with retail and food service, would remain in service. The golf course would continue to serve as a spray field for the water reclaimed by the Wawona wastewater treatment plant.

5. Recreational Vehicle Facilities: The RV dump site in Wawona would continue to be located in close proximity to the river.

6. NPS Maintenance Area
   - Maintenance Yard: The NPS maintenance facility would continue to exist in its current location, condition and configuration.
   - Wawona Stock Camp: The stock camp with two sites would continue to be located in a sensitive resource area.

Cultural Resources: Ground disturbing activities, potential loss to shallow deposits of historic artifacts and features, abandoned infrastructure, informal trails and visitor use affect culturally sensitive areas.

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Detailed Description of Alternative 1 (No Action)

The following section describes the existing management concerns and localized concerns related to river values that would continue under Alternative 1 (No Action). This information is provided to help the reader compare the relative merits of the action alternatives (Alternatives 2-6).This section also describes existing conditions for user capacity, land use, and facilities management in the Merced River corridor. All of the descriptions are organized by river segment.

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Issues Affecting River Values

Biological Values

The management concern identified in Chapter 5, regarding the degree of bare soil observed within the Merced Lake East Meadow, would not be addressed. Localized concerns for high-elevation meadows and riparian habitat would also persist. More specifically:

- Meadow trails – Informal trails, trails in wet and/or sensitive vegetation, and trails that fragment meadow habitat, including meadow trails along the Red Peak and Triple Peak Forks, wetlands near Echo Valley and Merced Lake shore, and the mineral springs between Merced Lake and Washburn Lake would remain, with no restoration program to address such problem areas.

Recreational Values

The management concern identified in Chapter 5, regarding encounter rates on the section of trail from Echo Valley to Lewis Creek, would not be addressed.

User Capacity, Land Use and Facilities Management

Under Alternative 1 (No Action) visitor use would continue to focus on wilderness-oriented experiences characterized by opportunities for primitive and unconfined recreation or opportunities for solitude.

Visitor Activities and Services

The primary recreational activities in Segment 1 would continue to include hiking, sightseeing, and backpacking.

- Merced Lake Backpackers Camping Area and the associated infrastructure, such as flush toilets, water system, and bear boxes, would remain.
- Merced Lake High Sierra Camp would continue to have a 60-bed capacity, offer the same level of service, and all associated infrastructure would remain.
- Designated camping areas would continue to include Little Yosemite Valley, Moraine Dome, and the Merced Lake Backpackers Camping Area.
- Private boating would not be allowed in Segment 1.

Visitor Overnight Capacity

The Merced Lake High Sierra Camp would remain at its current capacity of 22 units (60 people per night). For dispersed camping, including those staying in the designated areas mentioned above, wilderness zone capacities would remain unchanged. The capacities for both the entire wilderness zone and the portion of the zone within the river corridor are listed in Table 8-6. Figure 8-3 illustrates the overlap between the river corridor and relevant wilderness zones which was the basis for developing the corridor-specific capacities.

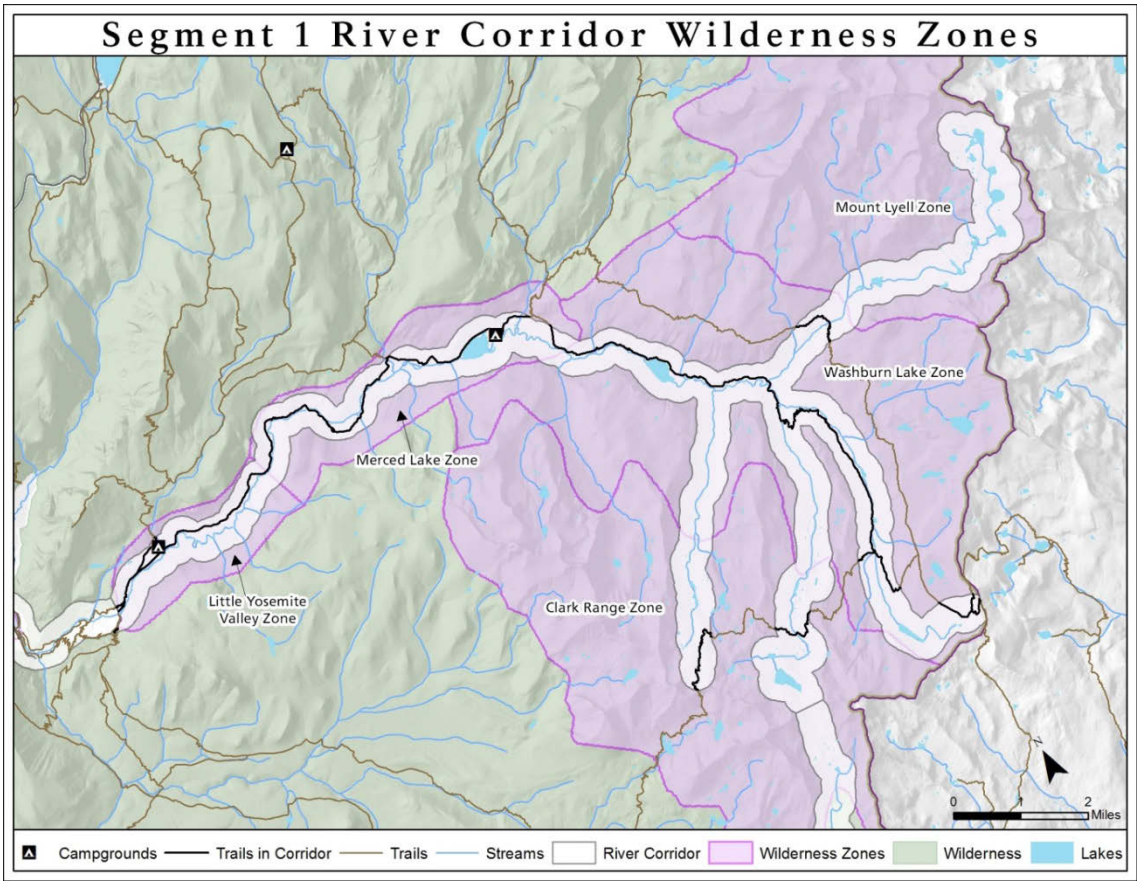
TABLE 8-6: WILDERNESS ZONE CAPACITIES – ALTERNATIVE 1 (NO ACTION)

Wilderness Zones	Alt 1 Overnight Zone Capacity	Alt 1 Overnight Zone Capacity Within River Corridor Only*
Little Yosemite Valley Zone	**150** people	**150** people
Merced Lake Zone	**50** people	**50** people
Washburn Lake Zone	**150** people	**100** people
Mount Lyell Zone	**50** people	**10** people
Clark Range Zone	**50** people	**10** people

NOTE:

* For some Wilderness zones, only a small portion of river corridor overlaps the zone. Therefore, the NPS calculated corridor-specific capacities that reflect the number of people in both the wilderness zone and the river corridor portion of the zone. These calculations assume visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Figure 8-3: Segment 1 River Corridor Wilderness Zones



Visitor Day-use Capacity

Day use generally occurs along the trail between the top of Nevada Fall and Little Yosemite Valley. This use is primarily associated with hikers destined for Half Dome; a location outside of the river corridor. This specific activity is managed through a permit system. As this is a designated wilderness area, the only access to this segment is by way of hiking trails. Day-use parking for the trailheads used to access this segment is included in the parking inventory for Yosemite Valley (see Segment 2, below).

Administrative Activities

Administrative use in Segment 1 consists primarily of regular ranger patrols, backcountry utility work, and occasional trail/restoration crew work. These activities are seasonal, minimal in comparison to visitor use, and do not significantly affect the overall user capacity.

Employee Housing Capacity

The Merced Lake ranger station and the Little Yosemite Valley trail crew and ranger camp would remain as temporary housing for employees working in this area. Rangers are regularly stationed in these locations throughout the summer season and a small number of employees (5-10) may temporarily reside at either location. No permanent housing exists in this segment.

Employee and Administrative Parking Capacity

Employee and administrative parking for this segment is located in Yosemite Valley and is accounted for in the Segment 2 parking inventory reported below.

Transit Options

The only access to this wild segment is via hiking trails, and the trailheads that provide access to this segment are located in East Yosemite Valley (Segment 2A). Thus, visitors to this river segment would use the transit options described under Segment 2 to access these trailheads.

Segment 2 (including Segment 2A and 2B): Yosemite Valley (Recreational and Scenic Segments)

Issues Affecting River Values

Under Alternative 1 (No Action), localized concerns pertaining to free-flowing condition and water quality would persist. More specifically:

Free-Flowing Condition

- **Riverbank riprap** –All riprap along the bed and banks of the Merced River within the park would remain.
- **Abutments and abandoned infrastructure** – The abutments and infrastructure associated with the former bridge at Happy Isles and the gauge base would remain in their current location and condition. The infrastructure associated with the Pohono Bridge gauging station would remain within the bed and banks of the river.

Water Quality

- **Pack Stock trail** – The pack stock trail, north of the river between Clark's Bridge and the Concessioner Stables, would remain within the ordinary high-water mark; the area would continue to be subject to seasonal flooding, accelerated erosion, and sediment deposition in the river.
- **Upper Pines (RV) Dump Station** – The Upper Pines RV dump station would remain adjacent to the river along with the associated potential for water quality impacts.
- **Yosemite Valley Day-use Parking Area (Camp 6)** – This unimproved parking area would remain without additional mitigation for water quality protection. It would continue to be located within the five- to ten-year floodplain in the potential channel migration zone.

Biological Values

As described in the overview of this alternative, some ecological restoration could occur under Alternative 1 (No Action). However, most of the management concerns regarding meadow fragmentation in several Yosemite Valley meadows and riparian conditions (identified in Chapter 5) would not be addressed. Localized concerns pertaining to meadow and riparian habitat would also persist. More specifically:

- **Ditching** – Human-constructed ditches would remain in meadows throughout Yosemite Valley.
- **General meadow hydrology** – Conifers would continue to encroach into Yosemite Valley meadows. While the NPS would continue the mechanical removal of conifers to reduce fuel loads under the park's *Fire Management Plan*, no additional action would be taken to mitigate conifer encroachment.
- **Meadow habitat** – Formal and informal trails, abandoned roadbeds, and informal roadside parking would remain in meadows and wetlands in Ahwahnee Meadow, El Capitan Meadow, Cook's Meadow, Leidig Meadow, and Sentinel Meadow. Roads and bike paths would continue to bisect Ahwahnee Meadow, Stoneman Meadow, Leidig Meadow, and Sentinel Meadow without mitigation to enhance sheet flow.
- **Abandoned infrastructure**– Abandoned infrastructure would remain in Eagle Creek Meadow, Royal Arches Meadow, Cook's Meadow, Bridalveil Meadow, the western (closed) portion of former Lower Pines Campground, and at the former lodge cabin/volunteer center at Yosemite Lodge.
- **Valley Loop trail** – The Valley Loop Trail would continue to pass through sensitive and sometimes inundated meadow habitat in Slaughterhouse Meadow and Bridalveil Meadow.
- **Ahwahnee Meadow** – Ahwahnee Meadow topography would continue to be modified by ditching, fill material found in the former golf course, a former roadbed in the southwest corner of the meadow, and large conifers that have become established along the former roadbed. Additionally, the tennis court would remain in a black oak community.
- **El Capitan Meadow**- Soil compaction and trampled vegetation, resulting from informal trails and access to the meadow from roadside parking, would continue. The NPS would continue to remove invasive non-native plants following the *Invasive Plant Management Plan*.
- **River reach upstream of El Capitan Moraine** – The NPS would take no action to enhance the riparian habitat and improve channel complexity in the river reach upstream of El Capitan moraine to the picnic area at Sentinel Beach.
- **Foot traffic** – Heavy foot traffic associated with campgrounds, lodging, rafting operations, and picnic areas would continue to denude riparian vegetation. High levels of visitor use impacts would remain near the river at Valley Campgrounds, El Capitan Bridge, Swinging Bridge, and Sentinel Beach Picnic Areas.

- **Pohono Bridge to site of former diversion dam** – No designated river access points would be identified for this reach; as a result, soil erosion and loss of vegetation would continue. Unsafe parking practices resulting from improper roadside parking would also continue.

Geological/Hydrological Values

Under Alternative 1 (No Action), localized concerns pertaining to geological/hydrological values would persist. More specifically:

- **Housekeeping Camp** – Several Housekeeping Camp units would remain located within the ordinary high-water mark.
- **Yosemite Lodge** – Several buildings would remain in the 100-year floodplain.
- **Bridges** – All bridges and elevated roadways would remain in place without mitigation to address bridge-related impacts to alluvial processes; this includes footings within the bed and banks of the Merced River.
- **Eagle Creek drainage** – No action would be taken to remove the berm or repair the channelization near Northside Drive.
- **River channel** – The NPS would take no action to mitigate river widening and low channel complexity between Clark's Bridge and Sentinel Bridge.

Cultural Values

Under Alternative 1 (No Action), the management concern identified in Chapter 5, regarding the "serious" condition of the Ahwahnee Gatehouse, would not be addressed. Management concerns for cultural values associated with black oak recruitment rates, meadows, and riparian areas would also not be addressed. Localized concerns pertaining to historic and cultural values would persist. More specifically:

- **Traditionally used plant populations** – Traditionally used plant populations would continue to be managed with the actions prescribed in the Park's invasive plant management program. Conifers and abandoned infrastructure would remain in black oak habitat.
- **Archeological sites** – Informal and formal trails, various types of visitor use, parking, and graffiti would continue to impact archeological sites in Yosemite Valley.
- **Historic resources** – Sites representing the prominent historic patterns of development in Yosemite Valley would remain in their current locations and in their current status. Those resources that are in serious, poor, or fair condition remain as such.

Scenic Values

Under Alternative 1 (No Action), management concerns regarding the visual impact of parking areas in Segment 2B (identified in Chapter 5) would not be further evaluated or mitigated. Localized concerns pertaining to visual resources would persist. More specifically:

- Vegetation growth that has intruded on scenic viewpoints would not be removed, and actions proposed in the *Scenic Vista Management Plan* would not be implemented.
- Riverbank erosion, informal trails, and riparian vegetation would continue to impact direct and foreground views of the river, river-dependent resources, and the peaks and walls rising above the river.

User Capacity, Land Use and Facilities Management

Alternative 1 (No Action) would accommodate the same kinds and amounts of use that exist today.

Visitor Activities and Services

Yosemite Valley would continue to provide a diversity of river-related and other recreational opportunities.

Activities and Services:

- **Yosemite Lodge Area** – All accommodations would remain. Employee housing would continue to be temporary in nature, unsightly, and inadequate. The existing design of the pedestrian circulation system at this popular attraction site would continue to be inadequate for the level of visitor use it receives. A network of social trails would remain.
- **Yosemite Village** – Visitor use facilities would remain at their current size and location in Yosemite Village. Industrial and administrative functions, such as the concessioner garage and general offices, would be co-located with visitor use facilities. Inadequate visitor way-finding at Yosemite Village Day-use Parking Area (Camp 6) would persist, along with pedestrian-vehicle conflicts and associated traffic congestion.
- **Housekeeping Camp** –All facilities, including lodging units that are regularly flooded, would remain at their current size and location at Housekeeping Camp. This location would continue to offer showers, restrooms, laundry facilities, and a grocery store.
- **Curry Village** – All accommodations and all visitor services would remain in their current configuration. Employee housing would continue to be temporary in nature, unsightly, and inadequate. The Concessioner Stables would remain at its current size and configuration, supporting both commercial horseback day rides and the Merced Lake High Sierra Camp. A kennel service would continue to be operated at the stables.
- **Bridalveil Fall** –The design of the pedestrian circulation system at this popular attraction site would be inadequate for the level of visitor use it receives. A network of social trails would remain.
- **Boating** – Commercial and private boating would continue on a 2.4-mile reach of the Merced River between Stoneman Bridge and Sentinel Picnic Area. Peak-use levels for this river reach currently range from 150 to 250 boats per day, but can be as high as 300 boats per day. About two-thirds of this use is associated with commercial raft rentals. This level of use would continue, under Alternative 1 (No Action) for both commercial and private boating.

Visitor Overnight Capacity

Overnight capacities would remain the same. Reservation systems for both lodging and camping would continue.

The campground inventory would be 466 sites, accommodating up to 2,892 people per night in Yosemite Valley.

- **Backpackers Campground** – 25 campsites, including two administrative sites would remain adjacent to the river.
- **Former Upper River Campground** – Ecological restoration of the former campground area would occur passively, with the passage of time. Asphalt and fill from the old campground would remain in place.
- **Former Lower River Campground** – Ecological restoration of the former campground area would occur passively, with the passage of time. Asphalt and fill from the old campground would remain in place.

- **Lower Pines** – 76 campsites would be retained (16 sites for administrative use; 18 sites RV-only).
- **North Pines** – 86 campsites would be retained (5 sites for administrative use; 23 sites RV-only).
- **Upper Pines** – 240 campsites would be retained (2 for administrative use; 44 sites RV-only).
- **Camp 4** – 35 walk-in campsites would remain at Camp 4.

Lodging inventory would remain at 1,137 units, accommodating up to 4,013 people per night.

- **The Ahwahnee Hotel**– Existing services and facilities would be retained, including the bar and food service, dining room, gift shop, sweet shop, pool, and tennis courts.
- **Curry Village** – 400 lodging units would be retained.
- **Housekeeping Camp** – 266 lodging units would be retained, some of which would continue to flood periodically.
- **Yosemite Lodge** – 245 lodging units would be retained.

Visitor Day-use Capacity

No changes would be made to the parking supply in Yosemite Valley (2,337 spaces).

- **Parking at The Ahwahnee** –Parking and traffic circulation at the Ahwahnee would continue to be inadequate to meet overnight and day-use demand.
- **Wilderness Parking Lot** –The Wilderness parking lot would continue to be undersized for demand. Soils in this location, which was once used as a landfill for Curry Village, would not be remediated.
- **Yosemite Village Day-use Parking Area (Camp 6/Village Store)** – Vehicle-pedestrian conflicts would continue to cause significant traffic congestion at this location. Overflow from the day-use parking area would continue to encroach on sensitive habitat at Cook's Meadow. Visitors would be directed to a roughly-defined dirt parking area with space for approximately 517 vehicles. Yosemite Village would continue to provide approximately 237 parking spaces for day-use.
- **Yosemite Lodge** –Demand for day-use parking at this location would continue to exceed supply during summer peak-use period. The west portion of the Yosemite Lodge parking area would continue to be used for all types of overflow parking, including tour buses, transit, and visitor parking. Continuation of this mixed use would perpetuate parking inefficiencies.
- **Camp 4** –The Camp 4 parking lot (89 spaces) would continue to be inadequately sized for the current level of overnight use.

Transit Options

Transit options for visitors and employees are as shown in Table 8-7. Additionally, at peak hours, approximately 15 tour buses are parked in the Valley. Tour buses are required to park in the vicinity of Yosemite Lodge, sharing this parking location with regional transit and private vehicles.

Administrative Activities

Administrative uses are well-established in Segment 2. NPS administrative offices, essential facilities, and concessioner offices occupy land in Yosemite Valley along with NPS and concessioner employee housing.

TABLE 8-7: TRANSIT OPTIONS – ALTERNATIVE 1 (NO ACTION)

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	8 runs per day (4 from Merced; 4 from Mariposa) (summer season, reduced schedule during winter months)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	No Service
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	2 runs per day- Sonora to Valley (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	1 run per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	7 minute peak interval between buses Year round except Visitor Center direct
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	15 minute interval between buses (summer only)
El Capitan Crossover	30 minute interval between buses (summer only)
West Yosemite Valley	No service
NOTE: *All Regional Transit runs are round trip.	

Employee and Administrative Capacity

All existing employee housing would remain in Yosemite Valley, under Alternative 1 (No Action). The housing supply would include 1,151 beds for concessioner employees and 71 units (164 beds) for NPS employees who are required or permitted occupants. Substandard and visually-distracting temporary housing would remain at Curry Village (Huff House). Both the Tecoya Dorms and Ahwahnee Row Housing (with their associated parking) would remain within the 100-year floodplain, with no development setback from Indian Creek. Temporary housing would also remain in the middle of the Yosemite Lodge parking lot (Highland Court). Additional housing in the corridor would include the Thousands Cabins near the entrance to the Yosemite Lodge. The Yellow Pine Administrative Campground would remain available for administrative use (4 group sites for up to 120 people).

Parking for administrative functions would be located within the land assignments for these uses and generally separated from visitor services. An estimated 1,169 parking spaces would be available for administrative uses (including parking spaces near residential areas).

Segment 3: Merced Gorge (Scenic Segment)

Issues Affecting River Values

Scenic Values

Under Alternative 1 (No Action), views from the river and roads in Segment 3 would continue to have high aesthetic value. Pull-outs and roadside interpretive displays would be maintained.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

The kinds of use that are currently provided in Segment 3 would continue under Alternative 1 (No Action). The primary activity would remain scenic driving along Highway 140 for travelers to other park destinations. However, several pull-outs would continue to provide parking and access to the river and other parts of the corridor along this segment.

- River-related recreational activities would continue to include swimming, fishing, and climbing. These activities occur in summer when the river is low and the air and water temperatures are warm.
- This section of river is steep and rocky, and boatable only by the most advanced paddlers. Kayaking/boating would not be allowed in this segment under this alternative due to the safety concerns associated with accessing the river for search and rescue operations during high use periods.

Visitor Overnight Capacity

No overnight accommodations are provided in Segment 3.

Visitor Day-use Capacity

The day-use parking inventory in Segment 3 would remain at 180 spaces.

Transit Options

No additional transit options would be provided.

Administrative Activities

The Arch Rock Entrance Station would remain within Segment 3, along with administrative vehicle access to Yosemite Valley and other park destinations.

Employee and Administrative Capacity

The residential unit at the Arch Rock Area would continue to house up to nine NPS employees.

Minimal designated parking would be provided for administrative use at the Arch Rock Entrance station.

Segment 4: El Portal (Recreational Segment)

Issues Affecting River Values

Under Alternative 1 (No Action), localized concerns pertaining to water quality and the cultural values would persist. More specifically:

Water Quality

- **NPS Maintenance and Administrative Complex**– The ad-hoc off-street and roadside parking areas would continue to be located between the Merced River and Foresta Road. These areas were not designed or built to prevent water quality contamination from automotive fluids, surface water runoff or sediment transport.

Cultural Values

- **Archeological sites** - Abandoned infrastructure located on site number CA-MRP-0181/H would continue to impact an area that is highly valued by traditionally-associated American Indians. In addition, informal trails, non-essential gravel roads, and visitor use that contribute to archeological site disturbances at CA-MRP-0250/H and CA-MRP-0251/H in Old El Portal would remain.

Biological Values

- **Abandoned infrastructure**– Abandoned infrastructure and imported fill at Abbieville and Trailer Village would remain.
- **Greenemeyer sand pit** – Greenemeyer sand pit would remain, with fill materials that preclude natural flooding and regeneration of riparian plant communities.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Under Alternative 1 (No Action), recreational activities in Segment 4 would continue to be oriented toward the local community and the vast majority of park visitors would pass through en route to Yosemite Valley and other park destinations. However, a small number of park visitors would continue to visit the Merced River in the El Portal segment as a destination. Primary river-related recreation activities, including swimming, fishing, and boating, would continue.

Visitor Overnight Capacity

There are no overnight accommodations for the public in Segment 4.

Visitor Day-use Capacity

The current inventory of visitor day-use parking (214 spaces) would be retained, consisting primarily of parking at the store and gas station and along the roadsides.

Transit Options

As in the Yosemite Valley and Merced Gorge segments along Highway 140, public transit along this travel corridor would be maintained. No additional transit options would be provided.

Administrative Activities

The El Portal Administrative Site within this segment was established to accommodate administrative use in support of Yosemite National Park. These well-established administrative uses would remain.

Employee Housing Capacity

The supply of employee housing would remain at 220 housing units (427 people) in Segment 4.

Employee and Administrative Parking Capacity

Parking for administrative functions would be located within the land assignments for these uses and would not compete with visitor parking. The NPS would maintain and estimated 610 parking spaces for administrative uses and 106 parking spaces for residents.

Segment 5: South Fork Merced River above Wawona (Wild Segment)

Issues Affecting River Values

Cultural Values

Under Alternative 1 (No Action), informal trails and visitor use would continue to impact rock ring features and related archeological resources in Segment 5.

User Capacity, Land Use and Facilities Management

Under Alternative 1 (No Action), visitor use levels in Segment 5 would continue to be minimal.

Visitor Activities and Services

Recreational activities in this segment would continue to include occasional backpacking and day hiking. Private boating would not be allowed in Segment 5.

Visitor Overnight Capacity

Very little overnight use occurs in Segment 5. The existing wilderness zone capacities would remain unchanged (Table 8-8).

TABLE 8-8: WILDERNESS ZONE CAPACITIES – SEGMENT 5

Wilderness Zones	Alt 1 Overnight Zone Capacity	Alt 1 Overnight Zone for Within River Corridor Only*
South Fork Zone	150 people	15 people
Johnson Creek Zone	50 people	5 people
Chilnualna Creek Zone	100 people	0 people

NOTE:
* Corridor capacities reflect the number of people within the section of the river corridor that overlaps the wilderness zone.

Visitor Day-use Capacity

As this segment is located entirely in designated wilderness, the only immediate access to the segment is by trail. Trailhead parking is reported in the parking summary for the Wawona area. Very little day use would occur in Segment 5.

Transit Options

As discussed above, the only access to Segment 5 is provided by hiking trails. The trailheads that provide access to this area are located in Wawona (Segment 7) and at locations managed by the U.S. Forest Service. Visitors would continue to use the transit options for Wawona to access these trailheads.

Administrative Activities

Administrative use would be minimal in this segment.

Employee and Administrative Capacity

No employee parking or housing would be provided in this segment.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Issues Affecting River Values

Under Alternative 1 (No Action), localized concerns pertaining to free-flowing condition, water quality, and cultural values would persist. More specifically:

Free-Flowing Condition

- **Wawona impoundment** – The current water collection and distribution system would be retained.
- **Abandoned infrastructure** – Abandoned metal pipes in side channels on the South Fork Merced River would remain, continuing to dewater the terrace.

Water Quality

- **Water withdrawals** – Surface water withdrawals from the South Fork of the Merced River in Wawona would continue and the water conservation plan relating to the minimum flow analysis for the South Fork would guide this use.
- **Wastewater collection system for the Wawona Campground** – The Wawona Campground would continue to be served by septic tanks and leach fields with the potential for effluent to migrate into ground water and the river nearby.
- **Wawona recreational vehicle (RV) dump station** – The Wawona RV dump station would remain very close to the banks of the river, posing a potential risk to water quality.
- **Wawona Store Picnic Area**– During periods of peak visitation, visitor use levels would continue to exceed the design capacity for the Wawona Store Picnic Area near the Pioneer History Center. No formal river access point would be provided for the steep riverbank and erosion would continue.
- **South Fork Wawona Picnic Area** - The South Fork Wawona Picnic Area would not be clearly delineated and no formal river access point would be identified. Visitors would continue to access the river by creating informal trails.

Cultural Values

- **Archeological Sites** - Visitor use would continue to cause ground disturbing impacts to surface and sub-surface archeological resources.

User Capacity, Land Use and Facilities Management

Overall, Alternative 1 (No Action) would continue to offer the kinds and amounts of use that currently exist in the Wawona area. Segment 6 includes the Wawona impoundment and visitor use would continue to be prohibited in this area due to water quality and safety concerns. Therefore, the summary of visitor activities and services provided below pertains only to Segment 7.

Visitor Activities and Services

A range of visitor recreation activities would continue to be available. River-related activities would include swimming, fishing, and boating.

- Swimming opportunities would continue to be popular at the Wawona Swinging Bridge area.
- Private boating would continue to be allowed below Swinging Bridge, excluding the Wawona impoundment.

Other non-river-related recreational activities in this segment include picnicking, camping, lodging, education and interpretation at the History Museum, special events at the Wawona Hotel, and golfing. Each of these activities would continue under this alternative.

- Picnicking would continue at the Wawona Store area and the South Fork picnic area. No improvements to these facilities would occur, other than routine maintenance. No designated river access would be provided.

Visitor Overnight Capacity

The Wawona Hotel would continue to provide 104 rooms, accommodating a maximum of 247 people per night.

The number of sites at the Wawona Campground would remain at 96 individual sites and one group site. Two stock-use campsites would also remain, bringing the total camping inventory to 99 sites, accommodating a maximum of 618 people per night.

Visitor Day-use Parking Capacity

Day-use parking capacity would remain at 290 spaces.

Transit Options

Transit options would remain unchanged. The Wawona area shuttle would continue during the summer season, serving the Wawona Store, the South Entrance Station, and the Mariposa Grove of Giant Sequoias. The daily concession-operated shuttle between Wawona and Yosemite Valley would also continue along Wawona Road.

Administrative Activities

NPS Administrative uses are well-established in this segment and would continue. Both NPS administrative offices and visitor services offices would remain at their current locations.

Employee Housing and Parking

The existing 79 employee housing units would remain.

A total of 118 concessioner employees would continue to be housed in Wawona.

Parking for administrative functions would be located within the land assignments for these uses and would not compete with visitor parking. Segment 7 includes 65 administrative parking spaces within the river corridor.

Segment 8: South Fork Merced below Wawona (Wild Segment)

Issues Affecting River Values

There are no management concerns or localized concerns for river values in Segment 8.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Recreational use in Segment 8 would continue to be primarily limited to swimming and hiking. Additionally, some rafters may continue to put in below the Wawona campground, attempting the Class 5 multi-day adventure down the South Fork through the Sierra National Forest to the junction with the main stem of the Merced River. However, the section of river within Yosemite National Park is very short, and few people attempt the trip given the high skill-level required.

Visitor Overnight Capacity

Per existing camping regulations, overnight use would not be allowed in Segment 8.

Visitor Day-use Parking Capacity

The only immediate access to Segment 8 is via hiking trails. Day-use parking for this use is provided in the Wawona area (see Segment 7 above). Very minimal day use would occur within this segment.

Administrative Activities

Little or no administrative use would occur within Segment 8.

Employee Housing Capacity

No employee housing would be located in Segment 8.

Employee and Administrative Parking Capacity

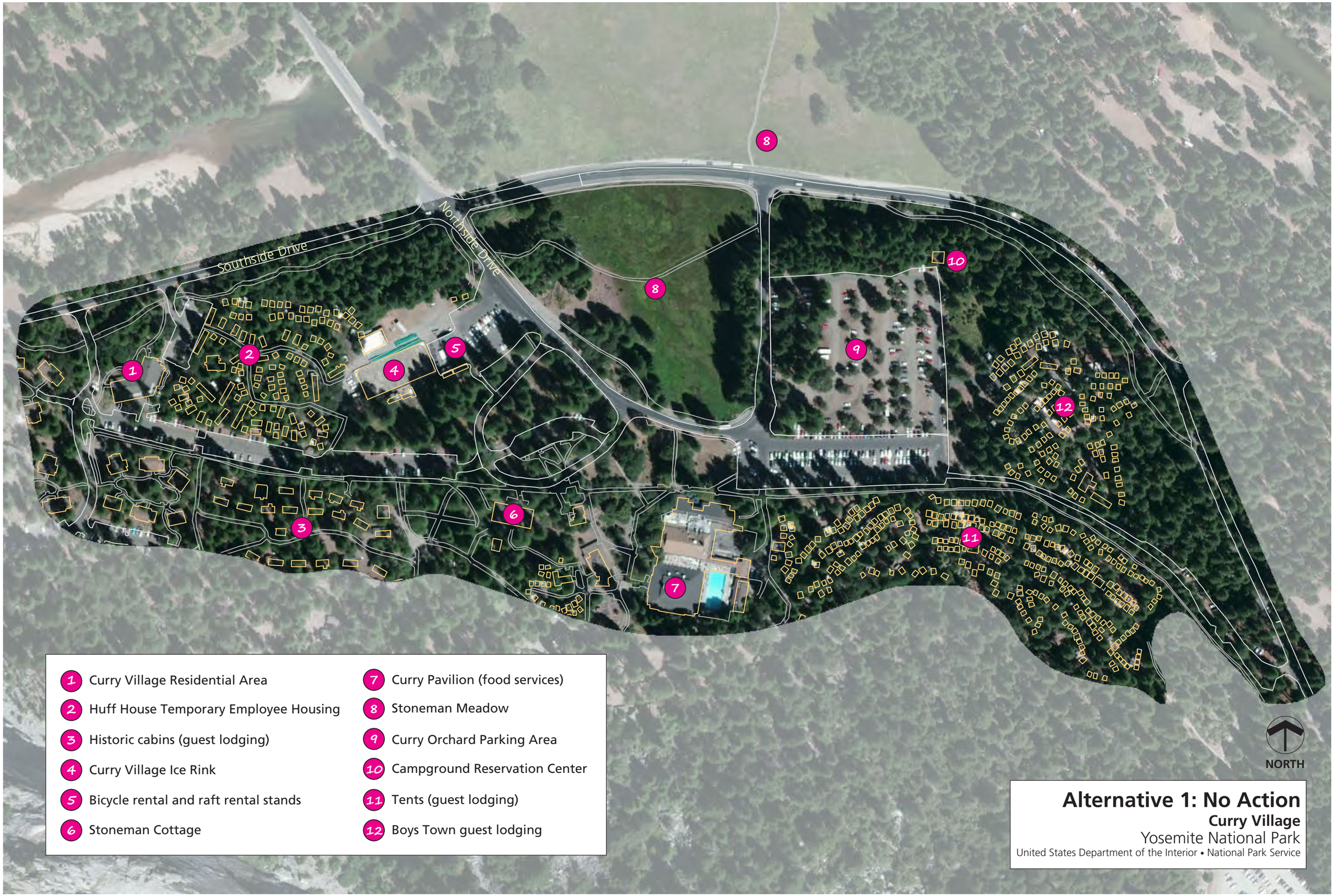
No employee or administrative parking would be located in Segment 8.

Transit Options

Transit services for access to this Segment 8 are described above under Segment 7.

Necessity of Major Public-use Facilities and Services

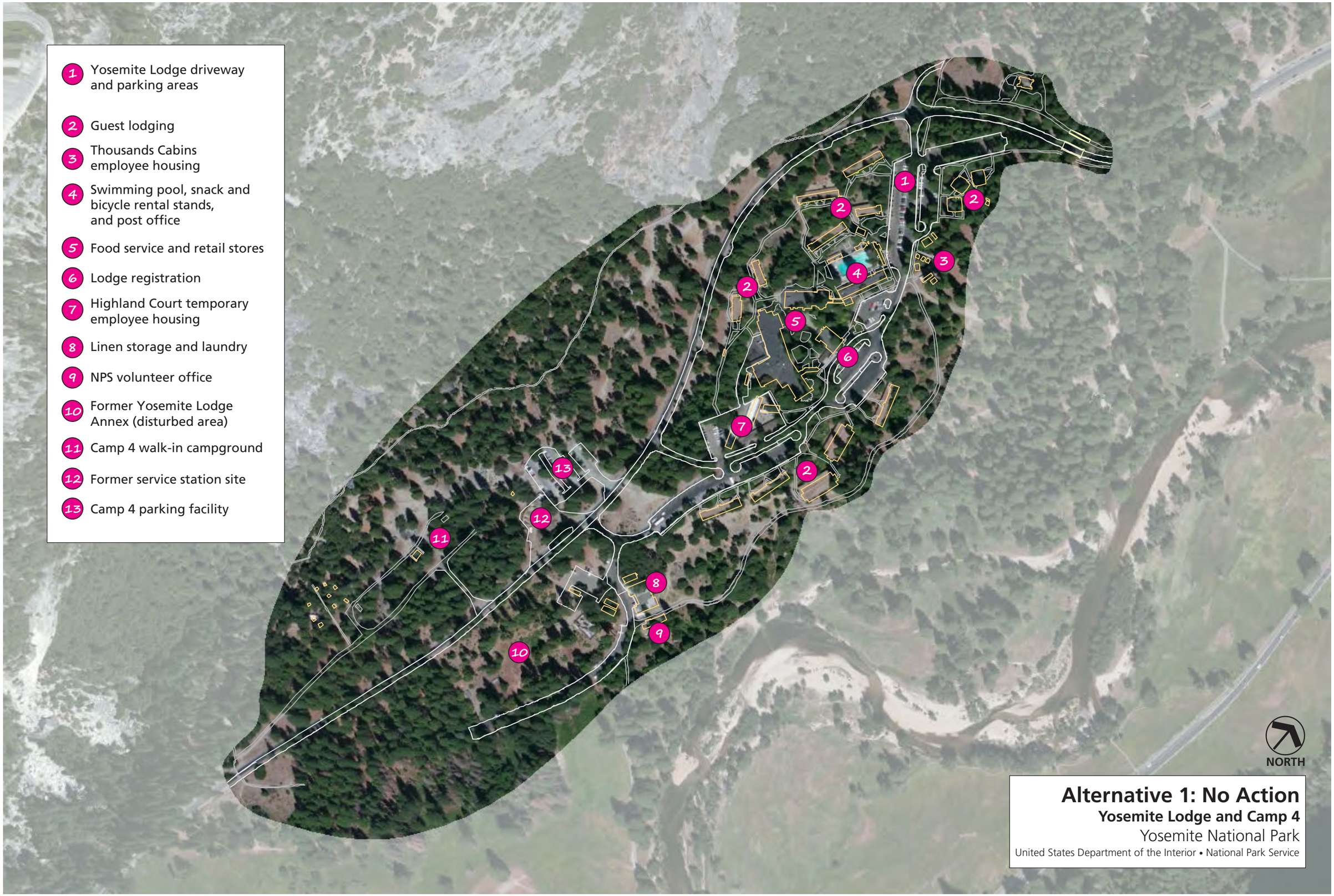
Under Alternative 1 (No Action), all of the facilities and services evaluated in "Development of Lands and Facilities" (Chapter 7) would remain in the river corridor. A determination as to their necessity in accordance with the WSRA mandate would not be conducted.


Southside Drive
Northside Drive
1
2
3
4
5
6
7
8
8
9
10
11
12
1 Curry Village Residential Area
2 Huff House Temporary Employee Housing
3 Historic cabins (guest lodging)
4 Curry Village Ice Rink
5 Bicycle rental and raft rental stands
6 Stoneman Cottage
7 Curry Pavilion (food services)
8 Stoneman Meadow
9 Curry Orchard Parking Area
10 Campground Reservation Center
11 Tents (guest lodging)
12 Boys Town guest lodging
NORTH
Alternative 1: No Action
Curry Village
Yosemite National Park
United States Department of the Interior • National Park Service

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1 Food service
2 Village Mall
3 Village Store
4 Art Activity Center (former bank building)
5 Concessioner General Office
6 Parking area
7 Concessioner Garage
8 Employee housing area
9 Village Drive
10 Northside Drive
11 Sentinel Drive
12 Yosemite Village Day-use parking area (Camp 6)
13 Temporary restrooms and visitor contact station
NORTH
Alternative 1: No Action
Yosemite Village Day-use Parking Area
Yosemite National Park
United States Department of the Interior • National Park Service

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1 Yosemite Lodge driveway and parking areas
2 Guest lodging
3 Thousands Cabins employee housing
4 Swimming pool, snack and bicycle rental stands, and post office
5 Food service and retail stores
6 Lodge registration
7 Highland Court temporary employee housing
8 Linen storage and laundry
9 NPS volunteer office
10 Former Yosemite Lodge Annex (disturbed area)
11 Camp 4 walk-in campground
12 Former service station site
13 Camp 4 parking facility
NORTH
Alternative 1: No Action
Yosemite Lodge and Camp 4
Yosemite National Park
United States Department of the Interior • National Park Service

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1. Open storage areas
2. NPS stables and corral
3. Covered storage structures
4. Search and Rescue operations
5. Fueling station
6. Government Utility Building
7. Service bay access
8. Utility buildings
9. Former construction management office (removed)
10. Concessioner Maintenance and Warehouse Building

NORTH

Alternative 1: No Action

Yosemite Valley Maintenance Area

Yosemite National Park

United States Department of the Interior • National Park Service

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ACTIONS COMMON TO ALTERNATIVES 2-6

Many actions to protect and enhance river values and to relocate certain facilities and services are the same for Alternatives 2-6. To avoid repeating them in the description of each alternative, these "common" actions are reported in the following section. When evaluating the individual alternatives in the Final Merced River Plan/EIS, readers should include the material in this section, as it describes the comprehensive ecological restoration plan that will be used to protect river values and is an integral part of each action alternative.

Many of the actions described in this section respond directly to the management concerns and localized concerns identified in "River Values and Their Management" (Chapter 5). Appendix E provides additional details about the specific equipment, techniques and timeframe for accomplishing individual restoration actions. Alternatives 2-6 also incorporate the boundaries, classifications, and Section 7 determination process described in Chapters 3 and 4, the monitoring program presented in Chapter 5, and the mitigation measures listed in Appendix C.

Ecological Restoration Goals

Ecological restoration responds to the National Park Service mission to allow natural processes to prevail, and to protect scenery and historic resources (NPS *Management Policies 2006*). Such actions also help to achieve the goals of the Wild and Scenic Rivers Act by enhancing the river's free-flow, water quality, and outstandingly remarkable values. Restoration of riparian, riverine, and meadow habitats enhances the scenic quality of the river corridor, providing a more natural setting for reflection and inspiration.

The overarching goal for restoration in the *Final Merced River Plan/EIS* is to:

> *Promote the ability of the Merced River to shape the landscape by reducing impediments to free flow (as defined by the Wild and Scenic Rivers Act), improving geologic/hydrologic processes, restoring floodplains and meadows, and protecting water quality*.

In addition to this broad goal, the following specific goals guided the development of the restoration actions included in Alternatives 2-6:

- Restore hydrologic function and connectivity with the floodplain including meadow and wetland habitats.
- Restore overbank flooding frequency by narrowing the river channel.
- Repair eroded riverbanks, restore riparian plant communities and prevent further human-caused, erosion-induced widening.
- Improve hydrologic conditions at bridges during peak flow periods.
- Increase channel complexity by increasing the amount of large wood in the river channel.
- Restore and protect the ecological processes that support riparian and meadow communities including naturally high groundwater levels and sheet flow.
- Remove impediments to natural hydrology including ditches, berms, and abandoned roadbeds in order to protect and maintain native plant communities.
- Restore and maintain the function, structure, diversity and productivity of native riparian and meadow plant communities to protect species diversity, ethnographic resources, and wildlife habitat.

- Protect and enhance scenic values.
- Mitigate impacts to archeological resources.

Ecological Restoration Actions Common to Alternatives 2-6

Multiple actions would be implemented under all alternatives to restore, protect and enhance hydrological/geological processes, free-flowing condition, water quality, and biological river values. A summary description of the major restoration actions is provided below and in Table 8-9. A detailed description of all common actions grouped by river segment follows the map series in this section.

Riparian Buffer – A 150-foot setback from the ordinary high-water mark would apply to all new development or redevelopment, corridorwide. This riparian buffer would filter runoff, reduce the magnitude and velocity of overland flow, trap sediment, and attenuate compounds such as nitrogen and phosphorous and pathogens. It would stabilize riverbanks by providing root cohesion on banks and floodplains, reduce erosion, and allow surface water to infiltrate the soil. Vegetation within the riparian buffer would provide a source of large wood to the river and adjacent floodplain, which would dissipate river flow energy and regulate channel form. The riparian buffer would enhance important wildlife habitat by allowing establishment of new vegetation and persistence of a complex habitat structure. The buffer would also protect aquatic ecosystems by providing organic nutrients, by supplying woody debris that would improve habitat complexity, and by moderating water temperatures by vegetative shading of the river.

Riprap removal and large wood management – Throughout the corridor, eroded riverbanks would be repaired through restoration, and vulnerable riverbanks and riparian vegetation would be protected from trampling. Visitor use would be redirected to resilient riverbanks, such as low-angle sandbar beaches. A substantial amount of riprap in Yosemite Valley would be removed to enhance free-flowing conditions and natural hydrologic processes and to improve riparian habitat. Large wood would be left in the river channel or incorporated into riverbanks to increase channel complexity and improve aquatic habitat. Refer to *Yosemite Directive # 31: Large Wood Management in the Merced Wild and Scenic River*, for additional detail.

Fire and Invasive Plant Management – Prescribed burning, conifer seedling removal and invasive plant removal are ongoing activities occurring in the corridor that have already been analyzed in other planning documents. Prescribed burning for resource benefits would follow the *Fire Management Plan*. Invasive plant removal would follow the guidelines of the *Invasive Plant Management Plan*.

Meadows and Riverbanks – Under all alternatives, ditches in meadows would be filled, six miles of informal trails in meadows and riparian areas would be removed, and abandoned underground infrastructure would be removed. Roadside parking along meadows and associated fill material would be removed to restore these areas and protect meadows from informal trailing. All action alternatives (Alternatives 2-6) would return ecological and cultural processes—hydrology and fire—to restore meadows and oak woodlands from currently conifer-dominated portions of the landscape. River channel restoration would occur along the reach between Clark's and Sentinel bridges, including placement of constructed log jams (CLJs), closure of sensitive riverbanks, and brush layering. A portion of Lower Pines campground that was damaged by the 1997 flood and subsequently removed would be restored to a mosaic of riparian, meadow and oak communities to enhance riparian and floodplain habitat. To protect water quality and improve riparian habitat, the pack stock trail between the stables and Happy Isles road would be removed

and the riparian zone restored to natural conditions. In all alternatives, campsites within 100 feet of the ordinary high-water mark would be removed to protect and enhance riverbanks and the riparian zone.

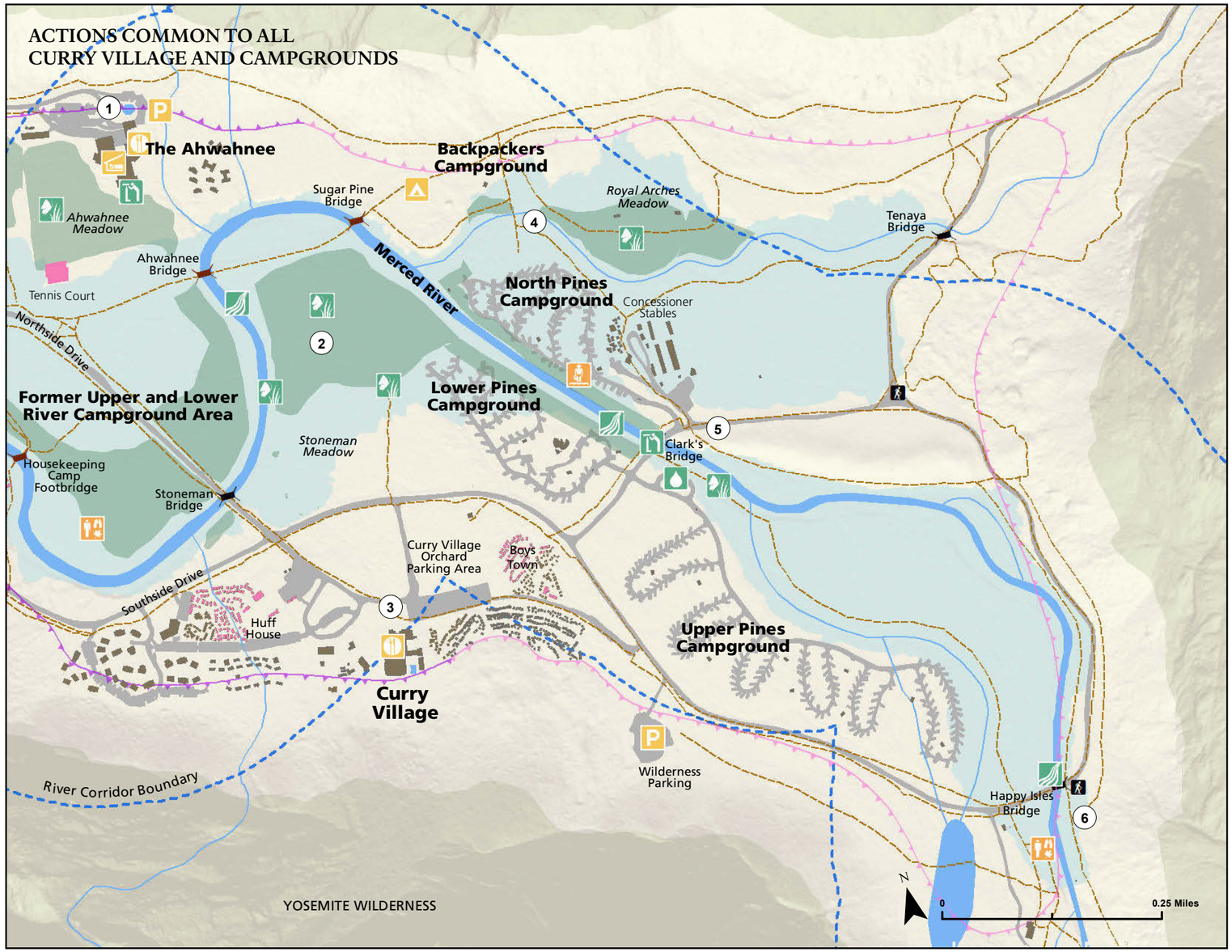
TABLE 8-9: SUMMARY OF MAJOR ACTIONS FOR PROTECTING AND ENHANCING RIVER VALUES—COMMON TO ALTERNATIVES 2-6

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	176 acres total (refer to Appendix E for specific locations)
Riprap to be Removed	5,700 linear feet (refer to Appendix E for specific locations)
Segment 2: Yosemite Valley	
Free Flow/Geological/ Hydrological Values	▪ Place large wood into river banks and river channel and construct log jams between Clark's and Sentinel bridges to enhance riparian habitat and channel complexity. ▪ Remove riverbank riprap in locations identified on the restoration maps included in Appendix E. ▪ Remove the Happy Isles bridge footings and relocate outdated infrastructure at the Pohono gauging station.
Riparian Buffer / Floodplain	▪ At a minimum, remove existing campsites from within 100 feet of the bed and banks of the river. ▪ Establish a riparian buffer to prohibit any new development within 150 feet of the bed and banks of the river. ▪ Move Yosemite Village Day-use Parking Area north at least 150 feet away from the river. ▪ Implement a 50-foot development setback from Indian Creek. ▪ Direct river access to resilient sandy beaches and sandbars, fence off sensitive riparian areas and restore native riparian vegetation.
Meadow Restoration	▪ Remove abandoned infrastructure, including tiles, pipes, and abandoned roads, and ecologically restore sites. ▪ Improve meadow hydrology by removing artificial fill, filling ditches, constructing culverts, and removing remnants of abandoned underground utilities to enhance water flows into meadows. ▪ Remove six miles of informal trails to reduce meadow fragmentation; restore disturbed areas to natural conditions. ▪ Eliminate some roadside parking and fence some areas to reduce the potential for informal trailing through sensitive meadow habitat. ▪ Improve the condition of plant communities at specific locations in Yosemite Valley (67 potential acres targeted) by restoring the mosaic of meadow, riparian deciduous, black oak, and open mixed conifer forest vegetation. Management actions may include re-vegetation, prescribed fire, mechanical removal of conifers, and infrastructure redesign.
Segment 4: El Portal	
Riparian Buffer / Floodplain	▪ Ecologically restore Greenemeyer sand pit. ▪ Enhance Valley Oaks in Old El Portal by creating an oak recruitment area at least one-acre in size in the vicinity of the existing bulk fuel storage area.
Segment 7: Wawona	
Riparian Buffer / Floodplain	▪ Ecologically restore portions of the Wawona campground. Relocate or remove all campsites within 100 feet of the bed and banks of the river. ▪ Designate river access points at picnic areas to prevent erosion and informal trails.
Scenic Values	
Segment 2: Yosemite Valley	
Iconic Scenic Views	▪ Reduce visual intrusions as part of the ecological restoration program. ▪ Ensure that new development is protective of scenic values. ▪ Implement actions in the *Scenic Vista Management Plan*, including removal of vegetation, to protect views from 47 vista points within the river corridor.
Cultural Values	

TABLE 8-9: SUMMARY OF MAJOR ACTIONS FOR PROTECTING AND ENHANCING RIVER VALUES—COMMON TO ALTERNATIVES 2-6

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Segment 2: Yosemite Valley	
Ethnographic and Archeological Resources	▪ Remove informal trails, non-essential roads, and infrastructure that impacts archeological sites. ▪ Delineate bike paths, roads, bridle paths, parking, staging, and trails away from sensitive cultural and ethnographic resource areas. ▪ Remove graffiti, and install fencing around rock art and other sensitive features to discourage inappropriate visitor use. ▪ Develop site management plans for archeological sites with complex uses and impacts, such as Yosemite Village.
Recreational Values	
Segment 1: Wilderness Above Nevada Fall	
Wilderness Recreation	▪ Provide opportunities for primitive and unconfined recreation or solitude in designated wilderness by managing overnight capacity through the wilderness trailhead quota and permit system, maintaining group size limits, monitoring resources to study the effects of visitor use, and implementing area closures where necessary to protect river values.
Segment 2: Yosemite Valley	
River-related Recreation	▪ Improve circulation and access while reducing crowding at key attraction sites.

COMMON TO ALL ACTION ALTERNATIVES



Management Actions
- Camping
- Circulation
- Cultural Resources
- Free-flow
- Housing
- Lodging
- Meadow and Riparian Restoration
- New Shuttle Stop
- Operations
- Parking
- Picnicking
- River Access
- Scenic Restoration
- Services and Facilities
- Visitor Experience
- Water Quality
- Restoration Area

Buildings
- Remove Building
- Retained or Varies by Alternative
- Road bridge
- Footbridge
- Stream
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Recreational Segment
- Wild Segment
- Scenic Segment
- Surfaced Areas
- 100-year Floodplain
- Designated Wilderness

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

1. The Ahwahnee

Meadow Restoration: Restore 5.7 acres by removing conifers to reconnect isolated meadow portions to improve hydrologic connectivity. Remove tennis courts from black oak woodland and ecologically restore area.

Scenic Views: Selectively thin trees that encroach on views toward Yosemite Falls and maintain views from inside the historic building.

Lodging: Retain the existing 123 units at The Ahwahnee Hotel.

Parking: Redesign existing parking lot; providing for proper drainage. Construct new 50-space parking lot east of the area. Follow Ahwahnee Historic Structure Report and cultural landscape report recommendations for parking area configuration and gatehouse restoration.

Services and Facilities: Retain bar and food service, dining room, gift shop, and sweet shop.

2. Stoneman Meadow and River Reach Between Bridges

Meadow Ecological Restoration: Use restoration fencing to protect the meadow's north end. Remove encroaching conifers and invasive plants.

Interpretation of River Processes: Create an interpretive nature walk through Lower Rivers area that emphasizes river-related natural processes and stewardship.

Large Wood Management: Leave large wood in river that does not compromise visitor safety or infrastructure. Incorporate large wood into riverbanks to provide structure for highly eroded riverbanks.

Hydrologic Processes: Place eight naturally-looking constructed log jams to address river widening in the channel between Clark's and Sentinel Bridges. Restore riverbank erosion through brushlayering and revegetation.

Riparian Restoration: Ecologically restore 20 acres of the former Lower Pines Campground, which was closed after the 1997 flood.

3. Curry Village

Services and Facilities: Retain Curry grocery store, pizza deck and bar, pavilion and cafeteria, Happy Isles Nature Center, and Curry Village swimming pool. Remove the Happy Isles snack stand, bike and raft stand, and relocate the ice rink to a site outside the corridor. Eliminate commercial horseback day rides at Concessioner Stables in Yosemite Valley.

Wilderness Parking Area: Formalize parking using best management practices to protect water quality. Remediate soils and undertake a clean closure process for the abandoned landfill.

4. North Pines and Backpackers Campgrounds

Backpackers Campground Western Expansion: Construct 16 new camping sites west of Backpackers Campground.

Royal Arches Meadow Restoration: Selectively thin encroaching conifers, decompact soils, and revegetate area with native species. Remove infrastructure, such as tiles, pipes, and abandoned road.

River Access: Direct visitors at Lower and North Pines campgrounds to four resilient sandy beaches through signage and maps.

5. Clark's Bridge Area

Clark's Bridge: Place large wood to lessen scouring from the bridge, along with a constructed log jam.

Upper Pines RV Dump Station: Relocate RV dump station and utilities away from the river to mitigate potential threat to water quality.

Riverbank Restoration: Direct visitors to resilient river access point. Stabilize eroded riverbanks.

6. Happy Isles Area

Happy Isles Wayfinding: Improve wayfinding from the shuttle stop to Happy Isles and the Mist Trail.

Happy Isles Road Bridge: Place large wood to lessen scouring from the bridge along with brush layering and a constructed log jam. Remove former footbridge abutments.

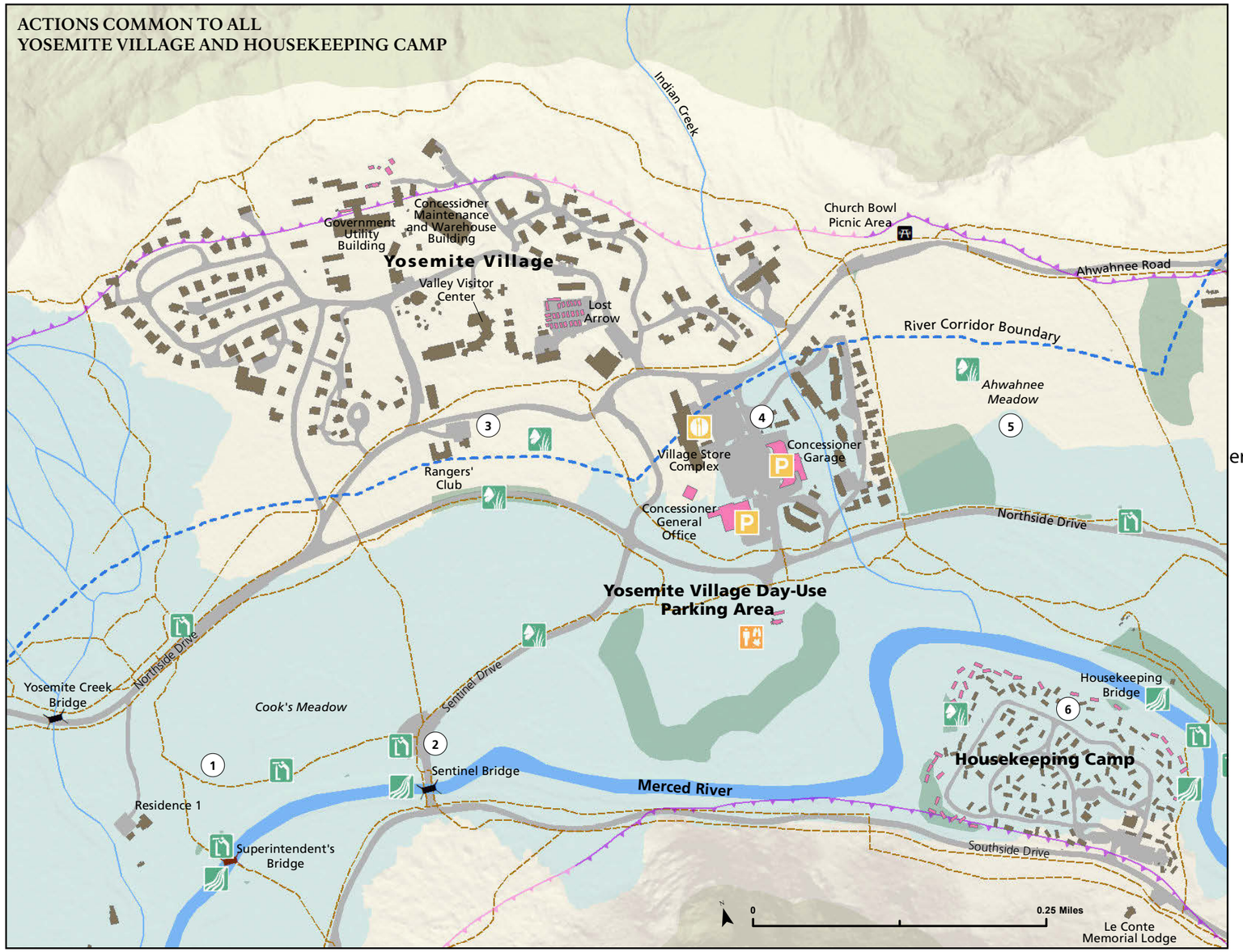
Pack Stock Trail: Remove 3,800 feet of pack stock trail near the riverbank. Remove asphalt and decompact hardened surfaces. Re-vegetate with native plants.

Cultural Resource Protection

Delineate trails; remove informal trails; and remove graffiti to protect culturally sensitive resources. Also, direct visitor use for additional protection.

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COMMON TO ALL ACTION ALTERNATIVES



Management Actions
- Camping
- Circulation
- Cultural Resources
- Free-flow
- Housing
- Lodging
- Meadow and Riparian Restoration
- New Shuttle Stop
- Operations
- Parking
- Picnicking
- River Access
- Scenic Restoration
- Services and Facilities
- Visitor Experience
- Water Quality
- Restoration Area

Buildings
- Remove Building
- Retained or Varies by Alternative
- Road bridge
- Footbridge
- Stream
- Trails
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- Inferred Rock-fall Hazard Line
- Recreational Segment
- Wild Segment
- Scenic Segment
- Surfaced Areas
- 100-year Floodplain
- Designated Wilderness

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Superintendent's Bridge Area
- Cook's Meadow South Boardwalk: Selectively thin conifers encroaching on open vistas across the meadows and views of Yosemite Falls, Sentinel Rock, North Dome, and Glacier Point.
- Superintendent's Bridge Free-Flowing Condition: Install constructed log jams on the Merced River, and utilize bioengineered stabilization on rip-rap to improve hydrologic function.
- Superintendent's Bridge Scenic Views: Thin conifers to maintain views of Sentinel Rock and North Dome.
- Hutchings View: Selectively thin conifers to maintain distant views of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Glacier Point, Royal Arches, and Washington Column.

2. Sentinel Bridge Area
- Free-Flowing Condition: Place large wood to lessen scouring from the bridge. Place a constructed log jam to increase channel complexity.
- Scenic Views: Selectively thin encroaching conifers and burn undergrowth to open distant views of Half Dome.
- Informal Shoulder Parking: Remove roadside parking along Sentinel Drive that encroaches on sensitive habitat. Ecologically restore area to natural conditions.

3. West Yosemite Village
- Informal Shoulder Parking: Remove roadside parking along Cook's Meadow. Restore meadow conditions.
- Roadbed Restoration near Cook's Meadow: Remove fill of former roadbed north of Northside Drive between the Rangers' Club and the three-way stop. Re-vegetate with native meadow species.

4. East Yosemite Village
- Village Visitor Contact Center: Re-purpose the Village Sport Shop for public use with pathways leading from the Yosemite Village Day-use Parking Area to the building. Remove the Art and Activities Center.
- Yosemite Village Services and Facilities: Retain Village Store and Grill. Re-purpose the Village Sport (Mountain) Shop as a visitor contact center.
- Concessioner General Office: Remove building from river corridor. Re-locate essential concessioner functions to the Concessioner Central Warehouse building.
- Concessioner Garage Relocation: Remove Concessioner Garage building, and re-locate the function to the Government Utility Building area, outside the river corridor. Re-develop garage footprint as visitor parking. Provide essential visitor vehicle service and emergency repair at El Portal and Wawona service stations.
- Indian Creek Area: Create a setback for Indian Creek by removing parking and residential yard use within 50 feet of the creek. Fence area and restore native riparian vegetation.

5. Ahwahnee Meadow Area
- Valley Meadow Ditch Restoration: Fill 2,155 feet of human-constructed ditches in Valley.
- Ahwahnee Meadow Scenic Views: Selectively thin encroaching conifers from oak woodland and meadow to maintain distant view of Yosemite Falls, North Dome, Royal Arches, Half Dome, Glacier Point, and Castle Cliffs.

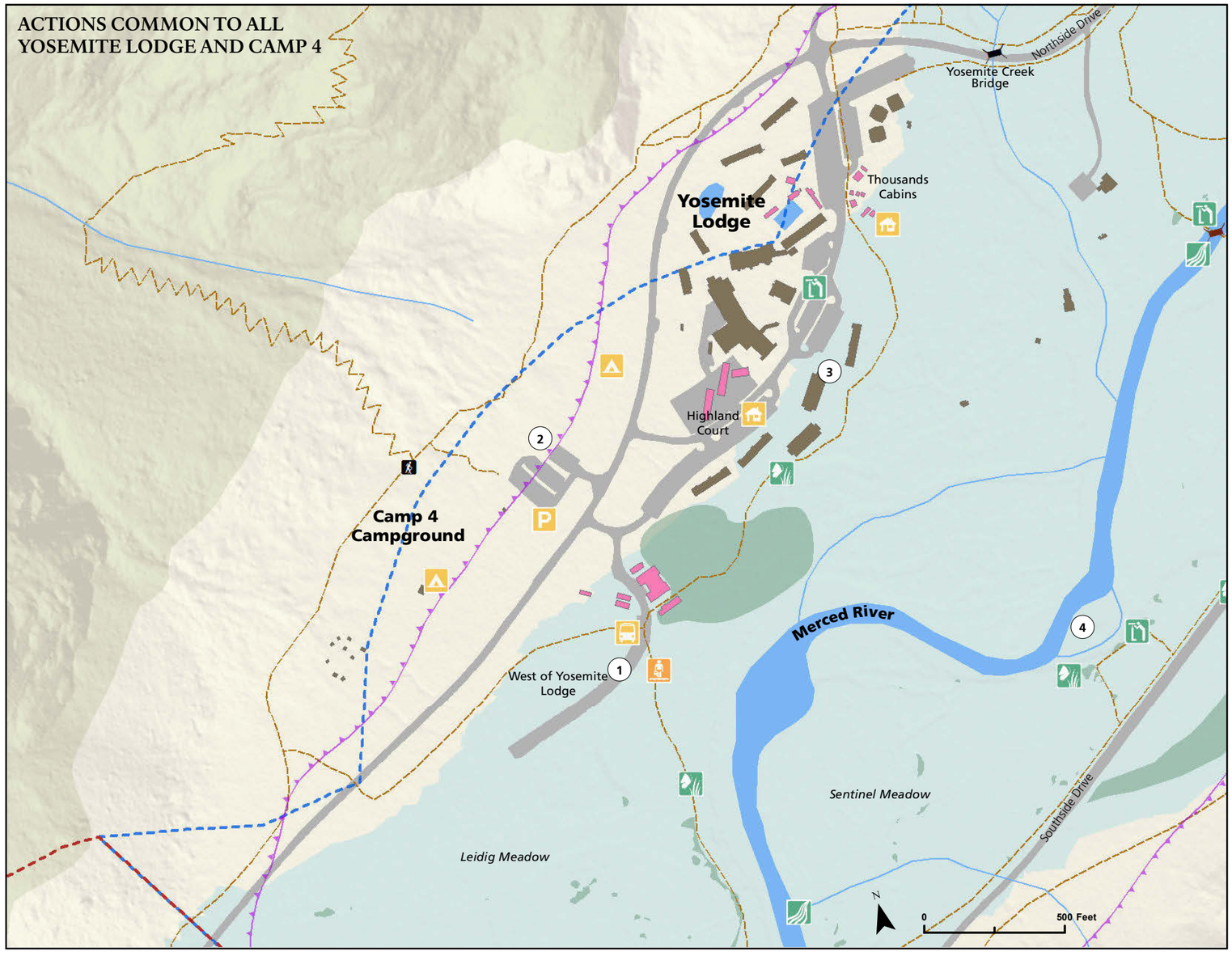
6. Housekeeping Camp Area
- Ecological Restoration and River Access: Restore riverbank by brush-layering, decompacting soils, and planting riparian species. Direct visitors to two resilient beach locations at the western edge of camp. Fence off current eastern river access point on a steep eroded bank.
- Scenic Views: Selectively thin conifers to maintain views of Glacier Point and Yosemite Falls.
- Revetment Removal: Remove 3,400 feet of revetment built into the riverbank that impacts hydrologic flow. Re-vegetate with riparian species. Replace 2,300 feet of revetment with bioengineered riverbank stabilization.

Cultural Resource Protection
- Remove informal trails that contribute to archeological site disturbance. Develop historic structure report and address recommendations for treatment to bring LeConte Memorial Lodge, which is a National Historic Landmark, to "good condition".

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COMMON TO ALL ACTION ALTERNATIVES



EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

1. West of Yosemite Lodge

Leidig Meadow Bike Path: Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.

Yosemite Lodge Beach Access: Direct river access to the Swinging Bridge sandbar and fence sensitive riparian area.

Former Yosemite Lodge Cabin Area Restoration: Restore 4.5 acres on western portion of Yosemite Lodge complex at site of lodging units removed after the 1997 flood. Remove fill, decompact soils, and plant native riparian species.

2. Camp 4 Area

Parking: Construct a 41-space parking lot for the Camp 4 Campground.

Camp 4 Campground: Retain 35 campsites. Expand Camp 4 eastward with 35 additional walk-in sites.

Camp 4 Shuttle Stop: Construct a formal shuttle stop near Camp 4.

3. Yosemite Lodge Area

Yosemite Lodge Portico Scenic Views: Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls.

Yosemite Lodge Concessioner Housing: Remove old and temporary housing at Highland Court and at the Thousands Cabins.

4. Sentinel Meadow

Meadow Boardwalk: Add a 150-foot section of boardwalk to the west of the existing boardwalk to accommodate visitor use and reduce meadow trampling.

Meadow Scenic Views: Selectively thin conifers to maintain view of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Royal Arches, Cathedral Rocks, and Washington Column for boardwalk visitors .

Cultural Resource Protection

Divert visitor use away from large bedrock mortar next to trail.

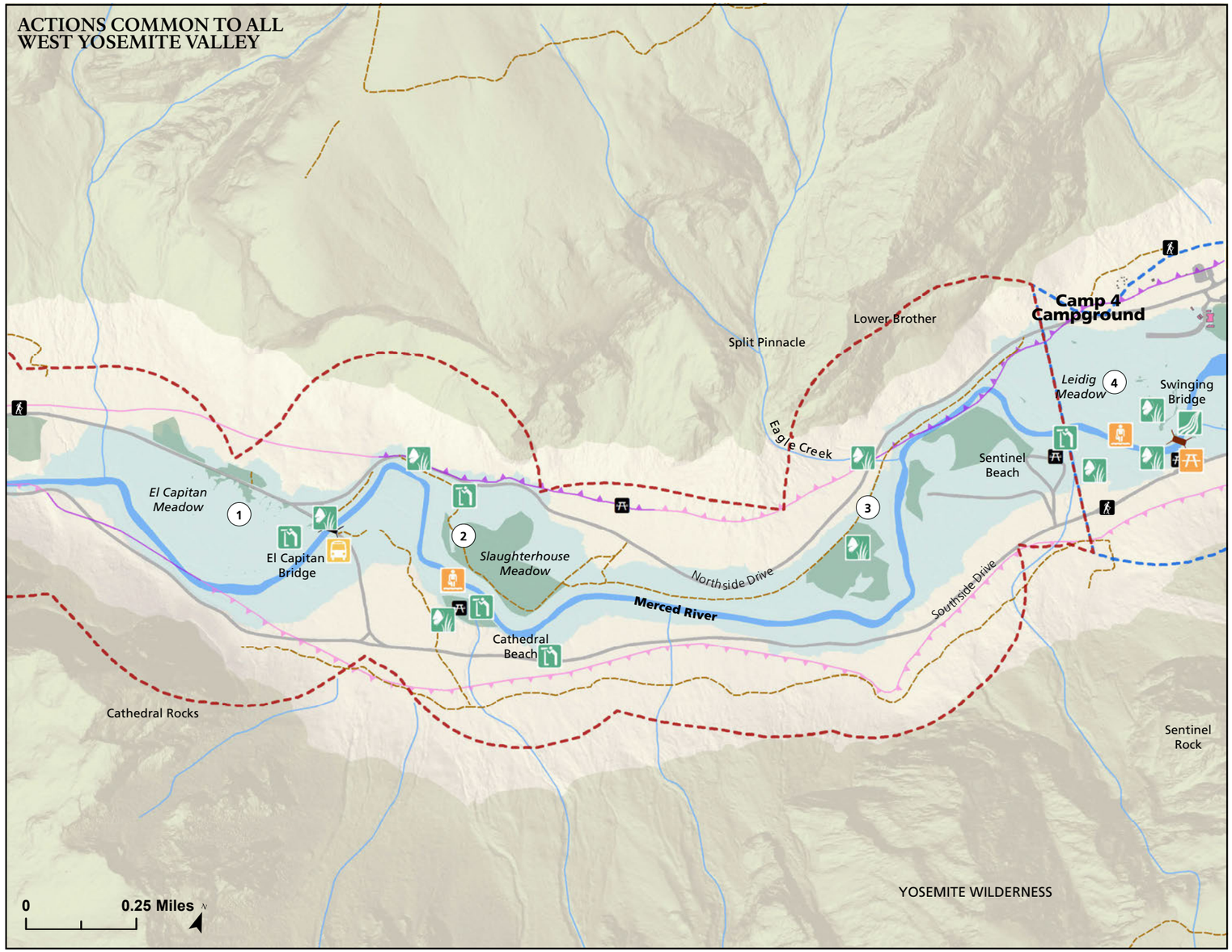
Management Actions
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- Designated Wilderness

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WEST YOSEMITE VALLEY

1. El Capitan and West Valley Meadows

Plant Community Changes: Improve condition of plant communities at specific locations in Yosemite Valley (67 potential acres targeted) by restoring the mosaic of meadow, riparian deciduous vegetation, black oak, and open mixed conifer forest. Management actions could include re-vegetation, prescribed fire, mechanical removal of conifers, and infrastructure re-design.

El Capitan Meadow Restoration: Re-route climber use trails on north side of road from meadow habitat to an appropriate upland route (a few meters to the east). Remove informal trails through meadow and oak woodland. Protect re-vegetated areas with fencing or other natural barriers and sign the area to reduce trampling of sensitive meadow vegetation. As opportunities arise through maintenance or restoration projects, improve hydrologic flow and meadow connectivity by extending the permeable road base across the entire segment of Northside Drive through El Capitan Meadow and add additional box culverts with bottom elevations equal to the meadow-surface elevation. Remove conifer saplings encroaching on meadow habitat.

El Capitan Bridge River Access: Re-direct visitors accessing the Merced River near El Capitan Bridge from sensitive riverbanks to resilient sandbar points. Fence and re-vegetate the eroded area.

El Capitan Shuttle Stop: Construct a formal shuttle bus stop in a location appropriate for the design for the restoration of the meadow and formalized river access.

Upstream of El Capitan Moraine: Localized ecological restoration would enhance channel complexity in the river reach upstream of the El Capitan moraine to the Sentinel picnic area. Restoration would include willow planting, brush layering, uninhibited accumulation and strategic placement of large wood.

2. Devil's Elbow and Cathedral Beach

Devil's Elbow Restoration: Relocate parking from Devil's Elbow to the east of current parking lot. Delineate a trail for river access to the large sandbar to the east. Remove the informal trail. Restore meadow conditions.

Cathedral Beach Picnic Area River Access: Designate a formal river access point, and direct use to more resilient areas. Remove infrastructure in the 10-year floodplain. Restore area by fencing sensitive areas, decompacting soils and planting native vegetation. Selectively thin conifers to maintain views of El Capitan.

3. Eagle Creek Area

Eagle Creek Meadow Restoration: Remove Eagle Creek/Rocky Point sewage plant abandoned infrastructure to restore 3.5 acres of meadow habitat. Remove berm and parking lot abutting the creek, add culverts to allow dispersed water delivery, and re-vegetate with native plants.

4. Sentinel Beach and Swinging Bridge Area

Sentinel Beach Picnic Area: Redesign the picnic area in its current location to better accommodate visitor-use levels at this picnic area. Formalize parking. Designate formal river access point. Re-establish riparian vegetation. Fence off sensitive areas, and re-direct use to more resilient areas. Selectively thin deciduous trees to open distant views upriver.

Leidig Meadow Restoration: Remove informal trails that incise and fragment meadow. Restore native meadow vegetation.

Swinging Bridge Ecological Restoration: Install protective fencing along denuded area. Re-vegetate with native plants. Connect new fencing to bridge to direct river access to a large sandbar downstream. Place a constructed log jam and large wood to lessen scouring from the bridge to improve hydrologic processes.

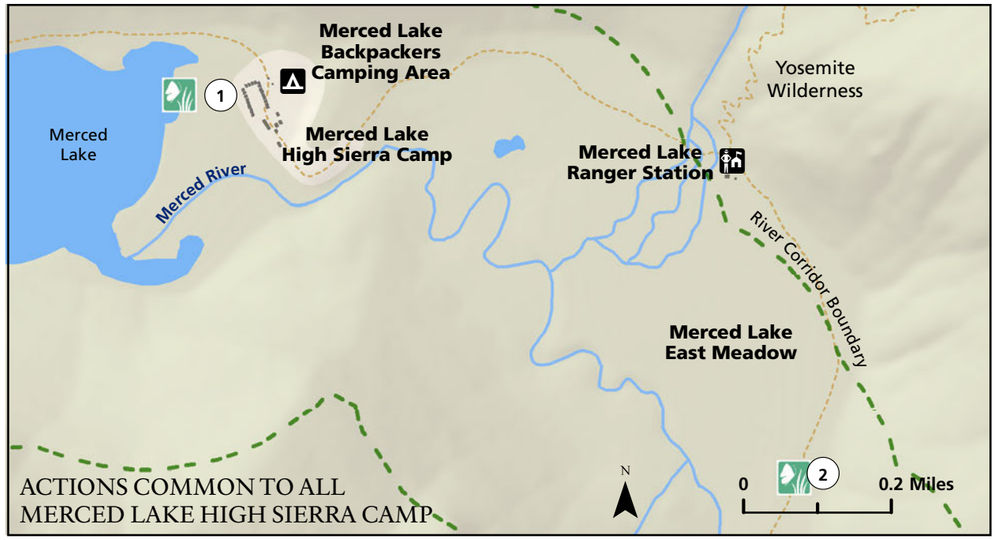
Swinging Bridge Picnic Area: Delineate picnic area by fencing and re-vegetate the river terrace 50 feet from the river. Use fences to re-direct visitor use across the bridge to river access to the Swinging Bridge sandbar. Remove revetment. Rebuild riverbank through bioengineering techniques. Re-establish riparian vegetation.

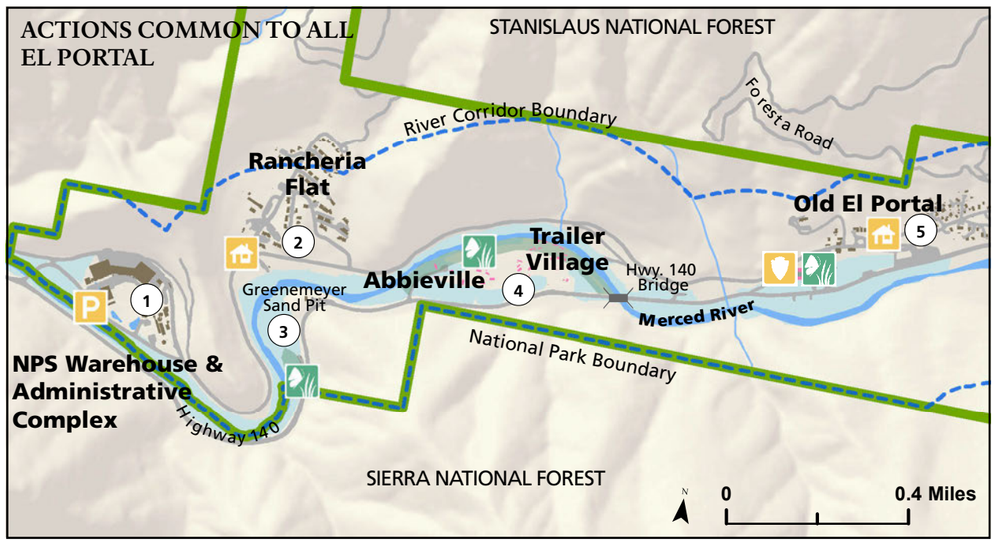
Cultural Resource Protection

Rehabilitate informal trails that impact archeological sites. Prohibit climbing on rock art boulders. Divert visitor use away from prehistoric rock art shelter. Increase interpretation and education effort about cultural resources for climbers and other visitors.

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COMMON TO ALL ACTION ALTERNATIVES





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- Designated Wilderness

MERCED LAKE HIGH SIERRA CAMP

1. Merced Lake Shore Meadow
   Restoration: Ecologically restore the meadow adjacent to the Merced Lake High Sierra Camp. Remove informal trails, decompact soils, fill ruts with native soils, and re-vegetate denuded areas.

2. Special-Status Plants
   Restoration: Re-route trails out of wetlands to avoid special-status plant habitat.

EL PORTAL

1. NPS Administrative Complex
   Parking: Formalize and pave dirt parking area located across Foresta Road from NPS Warehouse building, using best management practices, within existing footprint. Remove informal roadside parking, between Foresta Road and the Merced River, and ecologically restore the area.

2. Rancheria Flat
   Employee Housing: Construct infill housing units to replace removed temporary housing in Yosemite Valley (the number of infill units varies across the alternatives).

3. Greenemeyer Sand Pit
   Restoration: Ecologically restore the former mine operation area to natural conditions. Remove nonnative fill material and re-contour.

4. Abbieville and Trailer Village
   Restoration: Remove asphalt and imported fill within the riparian buffer. Re-contour and plant native riparian species and oaks within 150 feet of the river.

5. Old El Portal
   Employee Housing: Construct infill-housing units, for 12 beds, in Old El Portal to replace Yosemite Valley temporary housing.

Valley Oaks Restoration: Protect valley oaks in El Portal through best management practices related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the drip line of valley oaks.

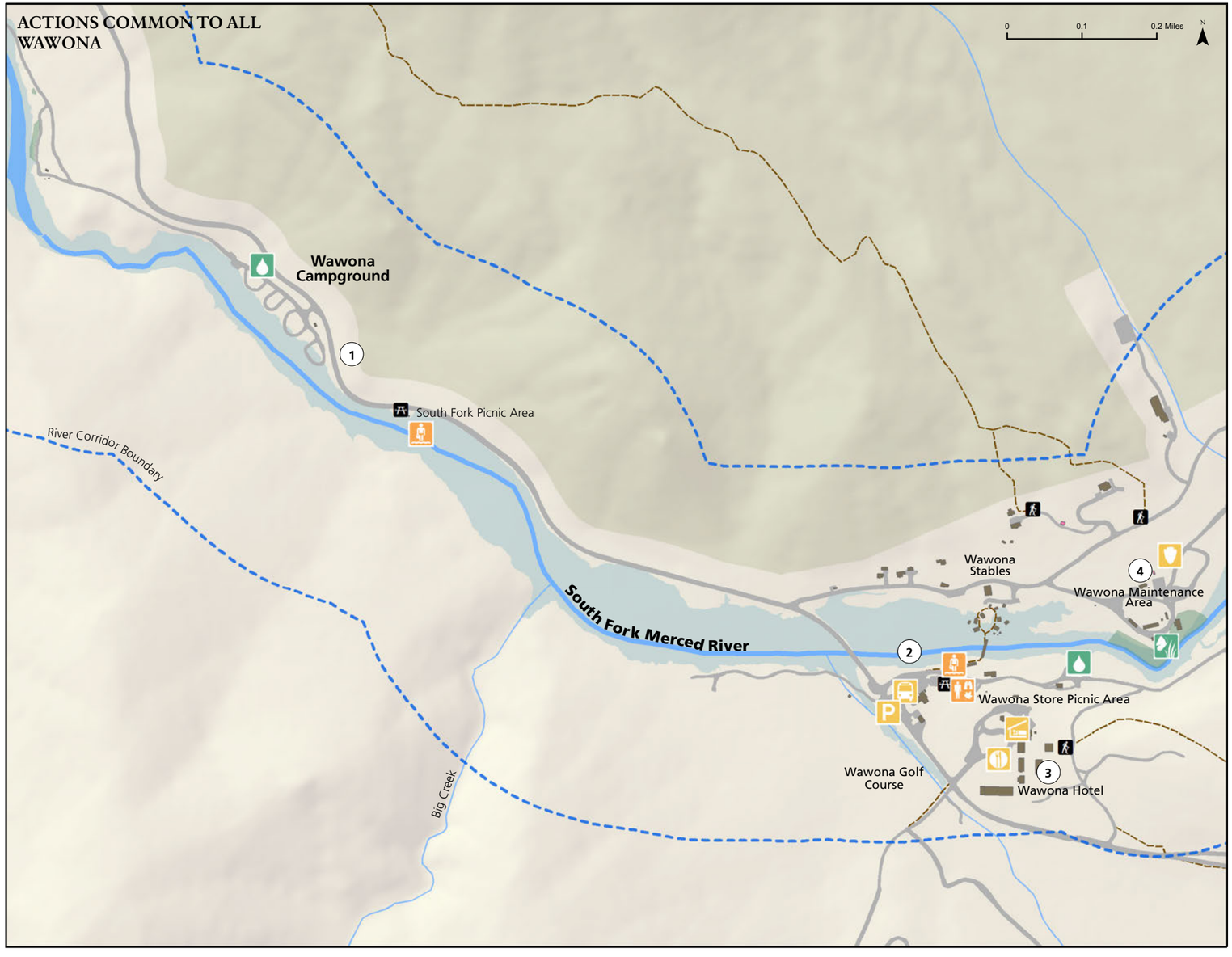
Fuel Storage Facility in the Floodplain: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.

Cultural Resource Protection

Address abandoned infrastructure, and remove informal trails, and non-essential roads to protect archeological resources. The plan to address abandoned infrastructure will be developed in consultation with traditionally associated American Indian tribes and groups. Any solution developed will include a recommended approach for deterring visitor use.

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COMMON TO ALL ACTION ALTERNATIVES



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WAWONA

1. Wawona Campground and South Fork Picnic Area

Wawona Campground Septic System: Remove septic system, and connect to the sewer system. Build a lift station above the campground to connect to the existing water treatment plant.

South Fork Picnic Area: Delineate picnic area. Add formal river access and path to the South Fork Merced River that encourages visitors to walk in resilient areas.

2. Wawona Store Area

Picnic Area and River Access: Add picnic benches. Place fencing to direct visitors to three hardened river access points. Add a path to river that encourages visitors to walk in resilient areas.

Parking: Retain day-use parking. Formalize eight tour bus parking spaces at Wawona Store. Remove roadside parking between store and Chilnualna Falls Road.

Shuttle Stop: Re-design bus stop for both transit buses and shuttle buses to accommodate existing visitor-use levels.

Public Restroom: Replace existing public restroom facilities with larger restrooms to accommodate existing visitor-use levels.

Wawona Recreational Vehicle Dump Station: Relocate the RV dump station to the Wawona Campground, away from the river. Design and construct the RV dump station on a new sewer line near the campground entrance, at least 150 feet away from the ordinary high water mark.

3. Wawona Hotel Area

Lodging: Retain the existing 104 lodging units at the Wawona Hotel.

Services/Facilities: Retain hotel restaurant and swimming pool.

4. Wawona Maintenance Area

Operations: Construct a building and grounds facility, a wildland fire facility, and a roads facility. Remove CCC-era structures to facilitate ecological restoration objectives.

Ecological Restoration: Remove staged materials, abandoned utilities, vehicles, and parking lot within 150 feet of the river. Restore native ecosystem.

Cultural Resource Protection

Relocate two stock use campground sites from sensitive resource area. Remove informal trails. Remove shoulder and off-road parking from sensitive resource area. Follow the Wawona Hotel Historic Structures Report to bring contributing elements to "good" condition.

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Detailed Description of Actions Common to Alternatives 2-6 by Segment

All River Segments

Actions to Protect and Enhance River Values

Ecological Restoration

- **Riparian Buffer** – Protect the riparian zone from new development within 150 feet of the ordinary high-water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high-water mark. The riparian buffer will protect water quality, hydrological processes, aquatic ecosystems, and riparian vegetation.
- **Abandoned Infrastructure** – In situations where abandoned underground infrastructure alters hydrology, develop case-by-case treatment strategies that ameliorate the ongoing impacts to hydrologic processes. This infrastructure includes remnants of abandoned sewer treatment facilities, sewer and water lines, and manholes. Treatment would be designed to avoid impacts to sensitive resources (including archeological sites) and may include removal, collapsing in place, plugging, or other measures (see the map series in Appendix E for known locations). Where infrastructure would be removed or relocated and restored to natural conditions, soils would be de-compacted and re-contoured, and the area re-vegetated with appropriate native plants.
- **Informal Trails** – Remove six miles of informal trailing through meadows and restore to natural conditions. Use fencing and signage to direct visitors to less sensitive areas that can accommodate some use without compromising meadow health. Define and delineate accepted trails with closure signs, fencing, and/or other natural barriers such as rocks and logs. Remove informal trails by de-compacting soils and filling ruts with native soils. Re-vegetate areas of denuded vegetation with appropriate native plants.
- **Conifer Encroachment** – Manually or mechanically remove conifer seedlings and saplings from meadows and under oaks within the river corridor.
- **Restore Eroded Riverbanks** – Re-vegetate areas devoid of vegetation with appropriate native plants. Protect re-vegetated areas using closure signs, fencing, and/or other natural barriers such as rocks and logs as deterrents. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings.
- **Vulnerable Riverbanks** – Direct visitor use along the river to stable and resilient access points, such as sandy beaches and low-angle slopes, using delineated trails, signs, campground maps and brochures; establish fencing and signage to protect sensitive areas. Areas susceptible to erosion—steep riverbanks, and high use areas exhibiting vegetation and soil loss from compaction—would be closed and restored using bioengineering and re-vegetation techniques.
- **Bridges and Associated Revetments** – Install constructed log jams, and utilize bioengineered stabilization on riprap to improve hydrologic function, reduce bank erosion, and improve riverine habitat. Strategically placed log jams diffuse and direct high velocity flows, a property that makes them a valuable tool to mitigate altered flow regimes around bridges. Log jams, unlike traditional rock revetment, reintroduce habitat complexity within the channel by creating additional bars and scour holes, and by providing cover for aquatic organisms. Used in conjunction with a wood retention policy and riverbank re-vegetation, log jams form part of a comprehensive restoration and mitigation strategy designed to improve the hydrologic function of the Merced River.
- **Revetments** – Remove riprap where possible to restore natural river processes. Replace riprap with native riparian vegetation, using bioengineering techniques, if riverbank stabilization is still necessary for infrastructure protection. Develop a set of best management practices for revetment

construction and repair throughout the river corridor. Practices would include use of vertical retaining walls where possible to limit impacts on the river channel.

- **Large Wood** – Manage large wood according to the policy outlined in *Yosemite Directive # 31: Large Wood Management in the Merced Wild and Scenic River*, leaving large wood that does not compromise visitor safety or infrastructure. Incorporate large wood into riverbanks to provide structure for highly eroded riverbanks and increase habitat quality. In developed areas where standing hazard trees must be removed for safety, rather than cutting and removing these trees, fall them into the river. Add engineered log jams in severely widened river reaches.
- **Trails in Sensitive Habitat** – Re-route trails out of sensitive habitats or install boardwalks through wetlands. New trail routes should avoid wetlands and special status habitat.
- **Free-flowing River Conditions** – To prevent future impacts to the free-flowing condition of the Merced River, the NPS would require all projects involving construction within the bed or banks of the river to undergo a Section 7 analysis as described in "Determination Process for Water Resources Projects" (Chapter 4).
- **Declining Reptile and Amphibian Species** – In accordance with NPS policy, continue management toward removal of non-native species and re-introduction of extirpated or declining species, as priorities and opportunities are developed. Prioritize studies of the Western pond turtle and foothill yellow-legged frog.

Cultural Values

The National Park Service would coordinate with traditionally associated American Indian tribes and groups to protect ethnographic resources:

- Implement best management practices to ensure continued coordination between traditionally associated American Indian tribes, groups, and traditional practitioners (through the Park American Indian Liaison) with law enforcement, fire management, interpretation, invasive species management, ecological restoration, and facilities management programs; include operational guidelines for material staging areas, parking, etc. to protect ethnographic resources.
- Provide access for traditionally associated American Indians for participation in annually scheduled traditional cultural events. In addition, provide tribal access for the personal conduct of traditional cultural practices through the Yosemite tribal fee waiver pass program.
- Continue to document the cultural and religious significance of historic properties (i.e., sites, objects, structures, districts, etc.) for Yosemite Valley. Build upon focused mapping and condition assessments for traditional use plants and archeological sites. Work in collaboration with traditionally associated American Indian tribes and groups, using staff expertise in cultural anthropology, botany, archeology, and oral history. Compile existing information gathered during previous ethnographic studies, fill gaps in the historical record through research in archival repositories, update and expand the oral history documentation, and complete detailed field mapping.

Many of the actions related to visitor use and ecological restoration common to Alternatives 2-6 would also protect archeological sites. In addition, all of the action alternatives would include ongoing inventory, documentation and monitoring. Other actions common to Alternatives 2-6 that would protect archeological resources include:

- Protect archeological sites by managing visitor use and development:
    - Manage visitor use levels; design and locate facilities to direct use to avoid sensitive cultural and ethnographic resource areas.

  - Remove informal trails; use natural features to conceal and divert foot traffic around archeological sites.
  - Protect rock art by removing graffiti and installing fencing to discourage inappropriate visitor use.
  - Increase interpretation and education about cultural resources.
  - Increase law enforcement/archeology monitoring to protect cultural resources.
  - Remove climbing hardware from sensitive cultural features.
- Mitigate the potential effects of ecological restoration activities on archeological sites by using noninvasive techniques wherever possible.
- Develop site management guidelines for archeological sites in areas with complex uses and impacts, such as Yosemite Village. The purpose of the guidelines would be to avoid and/or minimize resource loss through park actions such as development, repair, and maintenance of facilities and underground utilities.

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

Ecological Restoration

- **Special Status Plants** – Relocate sections of trail through wetlands in Echo Valley and through mineral spring outflow between Merced Lake and Washburn Lake. Re-surface the wet sections of the Mist trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.
- **Informal Trails in Meadows** – Remove informal trails that incise meadow habitat, trails in wet and/or sensitive vegetation, and trails that fragment meadow habitat, including trails along the Red Peak and Triple Peak Forks meadow, wetlands near Echo Valley and Merced Lake shore, mineral springs between Merced Lake and Washburn Lake, and other areas as necessary.
- **Merced Lake Shore Meadow** – Remove informal trails, de-compact soils, fill ruts with native soils, and re-vegetate denuded areas with native plants.
- **Merced Lake East Meadow** – Establish a preliminary grazing capacity for the Merced Lake East Meadow at a maximum of 58 pack stock nights annually, depending on meadow condition. Exclude pack stock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adjusted periodically to ensure the meadow condition meets the management standard for the bare soil indicator established for ORV 1 in Chapter 5.

Scenic Values

- Conduct a Visual Resource Management (VRM) contrast analysis (described in Chapter 5) to ensure that proposed modifications to existing development would not exceed the contrast rating of four.

Recreational Values

- Establish a limit of 7.5 pack strings per week (for an average of 30 strings per month) for resupply and operation of the Merced Lake High Sierra Camp.
- Conduct direct observation of visitor use levels for the section of trail from Echo Creek to Lewis Creek to address the management concern identified for ORV 19 in Chapter 5.

- Continue to concentrate visitor use at Little Yosemite Valley and Merced Lake by retaining designated camping areas in these wilderness zones.
- Private boating would be allowed with put-in and take-out locations at the discretion of the user. Generally, this kind of use would consist of short floats using boats that can easily be carried into this remote area. (The alternatives propose varying levels of use.)
- Provide opportunities for primitive and unconfined recreation or solitude in the Yosemite Wilderness by managing overnight capacity through the wilderness trailhead quota and permit system, maintaining group size limits, monitoring resources to study the effects of visitor use, and implementing area closures where necessary to protect river values.
- Commercial use would be managed in accordance with the findings of the Determination of Extent Necessary (Appendix L). The following is a summary of the limitations to commercial use in wilderness that would be included in Alternatives 2-6:
  - Disallow camping or travel by commercial groups more than ¼ mile from a maintained trail or public access road.
  - Limit all commercial stock trips to a 1:1.5 person-to-stock ratio. Accordingly, for every multiple of 3 persons (including employees), only two pack animals would be allowed (in addition to three riding stock).
  - Apply additional seasonal and weekend restrictions in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones as specified in Appendix L.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

Ecological Restoration

- **Ditching in Meadows –** Fill ditches (2,155') not serving current operational needs, using adjacent berm material or pond and plug techniques.
- **Road Improvements over Meadows** – Mitigate effects of roads on meadow hydrology with culverts or other engineered solutions that allow unimpeded groundwater flow. Use wide box culverts or other design components such as rolling dips, permeable subgrade, etc. to improve surface water flow. Examples include Southside Drive through Sentinel Meadow and Northside Drive through Cook's and El Capitan meadows.
- **Informal Trails** – Remove and restore six miles of informal trailing in meadows to natural conditions (Figure 8-4). Use fencing and signage to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Define and delineate accepted trails with closure signs, fencing, and/or other natural barriers such as rocks and logs. Remove informal trails by de-compacting soils and filling ruts with native soils. Re-vegetate areas of denuded vegetation with appropriate native plants.



Figure 8-4: The park has successfully removed networks of informal trailing in meadows. In this example before (left) and after (right) restoration of Stoneman Meadow, high visitor use was mitigated by adding fencing to direct people to a new boardwalk, which allowed access to the meadow without the associated impacts.

- **Valley Meadows: conifer encroachment, loss of meadow extent –** Improve condition of plant communities at specific locations in Yosemite Valley (targeted 67 potential acres) by restoring the mosaic of meadow, riparian deciduous vegetation, black oak, and open mixed conifer forest. Management actions may include re-vegetation, prescribed fire, mechanical removal of conifers, and redesign of infrastructure. These actions will enhance scenic vistas and maintain the cultural landscape, as well as enhance the condition of the Merced River ecosystem by sustaining the diverse mosaic of interconnected plant communities.
- **Revetments –** There are currently 15,589 feet of riprap along the bed and banks of the Merced River. Some riprap is needed to stabilize banks around critical infrastructure and would be retained. Under Alternatives 2-6, a total of 3,400 feet of riprap would be removed and re-vegetated with riparian species, where needed. An additional 2,300 feet or riprap would be removed and replaced with bioengineered riverbank stabilization.
- **Leidig Meadow: bike path** – Replace a 1,000 foot section of paved trail that passes through the ordinary high-water mark.
- **Valley Loop Trail: delineation and river access** – Reconstruct trail and designate river access, in locations such as Housekeeping Camp, Sentinel Beach, Cathedral Beach, Swinging Bridge, in the southwest area of the former River's Campground, and South of Slaughterhouse Meadow. Re-establish the Valley Loop Trail at Curry Village (where it currently ends).
- **Road bridge at Happy Isles: free-flowing condition** – Place large wood in the channel and riverbank to lessen the scouring from the bridge. Use brush layering and place a constructed log jam.
- **Sentinel Bridge: free-flowing condition** – Place large wood in the channel and riverbank to lessen the scouring from the bridge. Use brush layering and place a constructed log jam.
- **Swinging Bridge: free-flowing condition** – Place large wood in the channel and riverbank to reduce scouring from the bridge. Use brush layering and place a constructed log jam.
- **Superintendent's Bridge: footbridge and associated revetments** – Install constructed log jams, and utilize bio-constructed stabilization on riprap to improve hydrologic function.

- **Clark's Bridge: free flowing condition** – Place large wood to lessen the scouring from the bridge. Use brush layering of willows to stabilize banks and place a constructed log jam in the area.
- **Pack Stock Trail from Concessioner Stables to Happy Isles** – Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material, de-compact hardened surfaces, re-contour surfaces, and plant riparian vegetation where needed (Figure 8-5).



Figure 8-5: Stock trail in Happy Isles reach passes through riparian habitat. Its hardened surface affects natural hydrologic processes by preventing sediment transport and capture.

- **River Channel at Lower and North Pines Campgrounds** – Repair eroded riverbanks at Lower and North Pines campgrounds with bioengineering techniques such as brush layering. Allow vegetation to accrete sediment to rebuild the banks. The erosion at North Pines campground is farther advanced and continuous. In such cases, plant willows further out into the river channel, beyond the vegetation that is currently established (Figure 8-6).



Figure 8-6: Divot caused by river access at Lower Pines Campground where the riverbank is highly vulnerable to erosion at (left). Active restoration by brush layering will stabilize the riverbank, capture sediment to rebuild the bank over time and improve riparian habitat.

- **Lower Pine Loop: within the bed and banks –** Remove the Lower Pine Loop road located within the bed and banks of the river (between sites 60 and 62).
- **Housekeeping Camp: within the bed and banks** – Remove 34 lodging units from within the ordinary high-water mark at Housekeeping Camp. Redirect visitor use (both shore users and boaters) to more stable and resilient river access points, such as sandbars, and designate appropriate river access sites.
- **River Reach between Clark's and Sentinel Bridges: highly impacted riverbanks –** To address river widening and low channel complexity, build eight constructed log jams (CLJs) in the channel between Clark's and Sentinel Bridges. Locations of CLJs are shown in the map series in Appendix E. Logs would be gathered locally, including naturally fallen or salvaged hazard trees when available. Coniferous trees with exposed roots along the bank in proximity to the log jam may be pushed over into the river to be incorporated into the constructed log jam. These trees with the

root ball still attached at the bank would help to anchor the log jam to the bank. Burying ends of logs into the bank would also be used to anchor the log jam. Localized riverbank erosion would be repaired through brush layering and re-vegetation of the bank.

- **Swinging Bridge River Access –** Remove river access upstream, river-right of Swinging Bridge. Add fencing along the bike trail to connect to the bridge and re-vegetate 2,000 square feet of denuded area with riparian species and native grasses. Direct visitor use to a large sandbar directly downstream of the bridge (Figure 8-7).



Figure 8-7: The current river access point at Swinging Bridge (left) leads to a denuded riverbank. River access would instead be directed to the adjacent sandbar (right), which is naturally resilient to visitor use and provides a nice beach for visitor enjoyment.

- **Sentinel Beach Picnic Area** – Redesign the picnic area to better manage visitor use, designate the area as a formal river access point, fence off sensitive areas, re-direct use to more resilient areas, and reestablish riparian vegetation.
- **Indian Creek Drainage** – Create a buffer zone for the creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing.
- **El Capitan Meadow** – Reroute climber use trails on north side of road to an appropriate upland route (a few meters to the east). Remove informal trails through meadow and oak woodland. Protect re-vegetated areas with fencing or other natural barriers and sign the area to reduce trampling of sensitive meadow vegetation. As opportunities arise through maintenance or restoration projects, improve hydrologic flow and meadow connectivity by extending the permeable road base across the entire segment of Northside Drive through El Capitan Meadow; add additional box culverts with bottom elevations equal to the meadow surface elevation. Remove encroaching conifer saplings.
- **Sentinel Beach Picnic Area to El Capitan Moraine: channel complexity** – To enhance channel complexity in the river reach upstream of the El Capitan moraine to the Sentinel picnic area, localized restoration would include willow planting, brush layering, uninhibited accumulation, and strategic placement of large wood.
- **Stoneman Meadow** – Slightly expand fenced area to protect wetlands on north end of meadow near Lower Pines Campground. Remove invasive non-native species and encroaching conifers. Remove ditch, fill with native soils, and re-vegetate.
- **Bridalveil Meadow: stream headcutting and absence of willows** – Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along the riverbank, and in the adjacent meadow. Reestablish the riparian shrub layer. Manually remove encroaching conifer saplings.

- **Cook's Meadow Roadbed: abandoned infrastructure** – Remove fill from a former road bed north of Northside Drive between the Ranger Club and the three-way stop. Re-vegetate with native meadow species.
- **Cook's Meadow: informal shoulder parking** – Roadside parking along meadow (along both Northside Drive and Sentinel Drive) would be removed and the area restored to meadow conditions (Figure 8-8). Remove approximately 1,800 cubic feet of fill and re-vegetate with native seed and transplanted native plants.

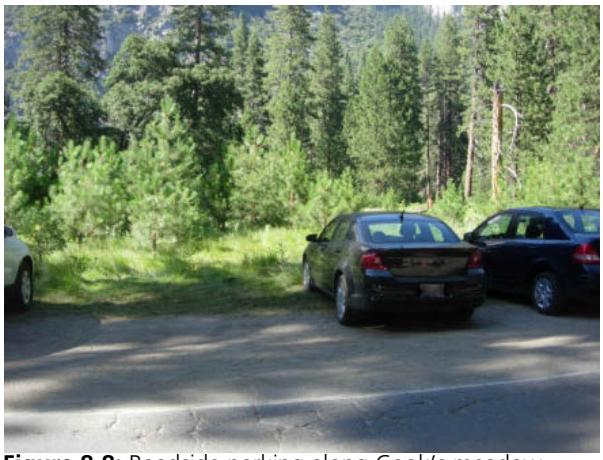


Figure 8-8: Roadside parking along Cook's meadow encroaches on meadow. Vegetation is crushed, soils compacted and net area of meadows reduced. All alternatives eliminate informal parking along meadows.

- **Leidig Meadow: informal trailing** – Remove informal trails that incise or fragment meadow habitat. De-compact soils and re-vegetate trampled areas with seed collected from local native meadow plants.
- **Rocky Point Sewage Plant: abandoned infrastructure** – Remove abandoned infrastructure occupying 9.5 acres at Eagle Creek Meadow. Remove remains of the abandoned Rocky Point Sewage Plant, including a two-unit reinforced concrete Imhoff settling tank, asphalt left from the demolition of the concrete sludge drying bed, and the circular reinforced chlorinating structure. Any remaining utility pipes would be removed. Re-establish natural landscape contours, including the distribution of ephemeral stream channels. Backfill with native soil and/or rehabilitate disturbed soils, and plant with native plant species.
- **Royal Arches Meadow: abandoned infrastructure** – Remove abandoned tiles, pipes, and abandoned road. De-compact soils, remove conifers, and re-vegetate with riparian species.
- **Sentinel Meadow: trampling** – Add a 150-foot section to the existing boardwalk in order to accommodate visitors and reduce meadow trampling. Substantial trampling is evident along river's edge at the north section of the boardwalk.
- **Western Portion of Former Lower Pines Campground Loop: abandoned infrastructure** – Restore 20 acres of the former Lower Pines campground to natural conditions. Remove any remaining asphalt and de-compact soils of former roadbed and campsite footprint. Treat invasive plants (velvet grass) (Figure 8-9). Manually thin conifer saplings and trees to allow for a mosaic of deciduous riparian species including alder and cottonwood. Remove tree stumps with an excavator and tub grinder. Restore channel topography using the 1919 USGS maps as a guide.



Figure 8-9: Asphalt remains in former Lower Pines Campground floodplain.

- **Devil's Elbow: riverbank erosion** – Relocate parking from Devil's elbow to the east of the current parking lot, and delineate a trail to access the large sandbar to the east of the "elbow," river right.

Remove informal trails and restore to meadow conditions through soil de-compaction and re-vegetation. Designate river access with appropriate signage.

- **Eagle Creek Drainage: channelization**– Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Re-vegetate with native upland species.
- **El Capitan Bridge: river access**– Redirect visitors accessing the river near El Capitan Bridge to sandbars. Fence and re-vegetate eroded areas.
- **Swinging Bridge: riparian impacts** – Delineate picnic area by fencing and re-vegetating the river terrace along the riparian zone (approximately 50 feet from the ordinary high-water mark) to reduce soil erosion. Fence off sensitive areas and reestablish riparian vegetation. Re-vegetate denuded area with riparian species and native grasses. Remove riprap and use bioengineering techniques to rebuild riverbank. Re-direct visitors to access the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point.
- **Valley Campgrounds: river access** – Direct visitors staying in Lower and North Pines Campgrounds to resilient sandy beaches through signage and campground maps and brochures. There are four sandy beaches in the vicinity of the campgrounds (Figure 8-10). Fence off vulnerable steep slope and provide signs directing visitors to current access.

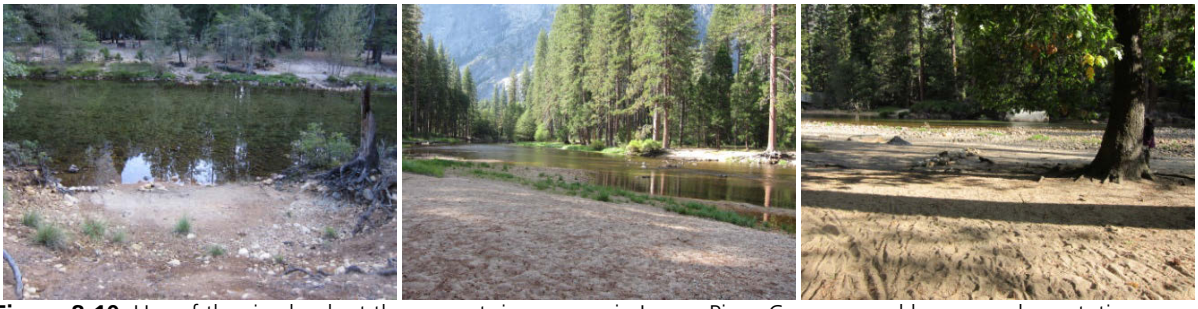


Figure 8-10: Use of the riverbank at the current river access in Lower Pines Campground has caused vegetation trampling and heavy erosion of this highly susceptible riverbank (left). Use will instead be directed to resilient sandbars such as these, located a short walk downstream (middle and right).

- **Yosemite Lodge: former lodge cabin area and NPS Volunteer Office, abandoned infrastructure** – Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins, and former NPS Volunteer Office located in the western portion of the Yosemite Lodge complex (those that were damaged by the 1997 flood and subsequently removed). Remove fill, de-compact soils, and plant riparian plant species.
- **Sentinel Beach Picnic Area: riparian impacts** – Redesign the picnic area to better manage visitor use and designate the area as a formal river access point. Fence off sensitive areas, redirect use to more resilient areas, and re-establish riparian vegetation.
- **Bridalveil Sewer Plant** – Remove or demolish buried structures, including a 200-foot long and 5-foot deep concrete chlorine contact chamber, aeration tanks, sludge digesters, and drying beds. Backfill with native soil and re-vegetate with native plants. Remove pipe leading to Black Springs.
- **Footings at the Former Happy Isles Footbridge (beyond gauge)** – Remove former Happy Isles footbridge footings and former river gauge base (steel reinforced concrete and wet and dry wall masonry). Re-vegetate denuded areas and improve way-finding between Happy Isles and the Mist Trail from the shuttle stop. Re-contour and de-compact soils; plant appropriate riparian vegetation in all denuded areas.
- **Pohono Bridge: infrastructure within the bed and banks** – Move the gauging station north of the river outside of the bed and banks. Re-vegetate denuded areas.

- **Clark's Bridge to El Capitan Bridge: large woody debris management** –Manage large wood according to Park policy (*Yosemite Directive # 31: Large Wood Management in the Merced Wild and Scenic River*). Trees that fall into the river would be retained in the river. Large wood may be strategically manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood near bridges.
- **Upper Pines: recreational vehicle dump station** – Relocate the recreational vehicle dump station to a site within the parking area at Curry Village.
- **Cathedral Beach: picnic area** – Designate area as a formal river access point, fence off sensitive areas, and direct use to most resilient areas. Remove parking in the riparian zone, de-compact soils, plant appropriate native vegetation, and delineate river access. Remove infrastructure (toilets, parking, and picnic tables) in the ten-year floodplain, de-compact soils, and re-vegetate.
- **Yosemite Lodge: beach access closure** – Direct visitors to the sandbar at Swinging Bridge. Fence the riparian area at Yosemite Lodge.
- **Ahwahnee Meadow: former golf course and tennis court** – Restore the impacted portion of Ahwahnee Meadow to natural meadow conditions, while allowing special functions, such as weddings, to continue on the lawn. Remove the tennis courts from the California black oak woodland. Restore topography by removing abandoned irrigation lines and fill, filling in ditches, and re-vegetating with native meadow vegetation. Reconnect disjointed portions of Ahwahnee Meadow by removing conifers to return approximately 5.65 acres to meadow habitat.
- **Pohono Bridge to Big Oak Flat Road Junction: river access** – Pave and designate five roadside pull-outs for river access between Pohono Bridge and the intersection of the Big Oak Flat Road. Install curbing along pull-outs and along El Portal Road to prevent further encroachment toward the river and associated resource damage. Completely remove one pullout that is not protective of resources. In the areas that require ecological restoration, de-compact soil and re-vegetate with riparian species (including willow), following delineation of river access. Install drainage improvements and head walls at 11 locations.
- **Eagle Creek Meadow** – Remove abandoned infrastructure from the vicinity of Eagle Creek; restore the meadow to natural conditions.

Cultural Values

- **Impacts to Traditionally Used Plant Populations** – The ecological restoration actions associated with this planning effort, implemented in concert with the existing invasive plant management program, would address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would be considered for removal and seedlings would be introduced into black oak stands with poor recruitment rates.
- **CA-MRP-0046/47/74** – Reroute stock trail and hiking trail away from sensitive area, remove graffiti from rock art boulder.
- **CA-MRP-0052/H** – Route bridle path away from site.
- **CA-MRP-0055/H** – Remove informal trails and parking pull-out. Increase law enforcement and archeology monitoring to protect rock shelter/rock art.
- **CA-MRP-0057** – Remove graffiti in rock shelter and remove informal trails. Increase law enforcement and monitoring of rock shelter.
- **CA-MRP-0062** – Remove the logs, graffiti, and informal trails; ecologically restore to natural conditions. Relocate the parking area away from the site.
- **CA-MRP-0076** – Remove informal trails, restore to natural conditions, and prohibit climbing.

- **CA-MRP-0080** – Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.
- **CA-MRP-0082/H –** Remove climbing bolts from rock shelter boulder and prohibit climbing. Increase interpretation, education, and outreach efforts for climbers.
- **CA-MRP-0158/309 –** Remove informal trails, restore to natural conditions, and prohibit climbing on rock art boulder. Increase interpretation, education, and outreach effort for climbers.
- **CA-MRP-0190/191 –** Delineate trail/bike path to prevent access within the site.
- **CA-MRP-0240/303/H –** Fence off/close access to milling feature next to trail.
- **CA-MRP-0902/H –** Remove informal trails and restore to natural conditions.
- **Ahwahnee Gatehouse and Parking Lot: condition –** When the Ahwahnee parking lot is redesigned, implement the recommendations from the *Ahwahnee Historic Structures Report* (1997) and the *Ahwahnee Cultural Landscape Report* (2010) to bring the Ahwahnee stone gatehouse and the Ahwahnee parking lot to "good" condition.
- **LeConte Memorial Lodge National Historic Landmark: condition –** Develop a historic structures report for the LeConte Memorial Lodge to determine the rehabilitation needed to bring the building to "good" condition.

Scenic Values

Some actions designed to achieve ecological restoration goals (described above) will also improve natural scenery. They are included in the list of actions common to Alternatives 2-6 for the protection of scenic values in Yosemite Valley.

- Ecologically restore eroded river banks, informal trails, and riparian vegetation that affect direct and foreground views of the river, river-dependent resources, and the peaks and walls rising above the river.
- Implement a riparian buffer to avoid future visual intrusions into the riparian zone; require a 150-foot setback from the ordinary high-water mark for any new or re-development.
- Eliminate visual intrusions to meadows associated with informal trails.
- Follow the guidance provided in *A Sense of Place: Design Guidelines for Yosemite Valley* in the location and design of new facilities. These design guidelines are intended to promote harmony between the built and natural environments.
- Conduct a Visual Resource Management (VRM) contrast analysis (described in Chapter 5) to ensure that future development would not exceed a contrast rating of 13 for West Yosemite Valley (Segment 2B) or a contrast rating of 22 for East Yosemite Valley (Segment 2A).
- Selectively thin conifers and other trees and shrubs that encroach on selected scenic vista points (47 vista points, 14 of which have prominent views of the river in the foreground and 33 of which occur within the broader river corridor). See Appendix H for details regarding scenic vista actions.

Recreational Values

Many general actions regarding the recreational setting, recreational activities, and quality of the recreational experience in Yosemite Valley would be common to Alternatives 2-6. These are summarized below:

- Allow private boating. Expected watercraft would include rafts, kayaks, paddle boards, inner tubes, and inflatable mattresses. The alternatives propose boating for different combinations of river reaches.

- Create an interpretive nature walk through the Lower River area that emphasizes river-related natural processes, the park's ecological restoration work, and what visitors can do to protect the river.
- Improve opportunities for picnicking at the Cathedral, Sentinel, and Swinging Bridge picnic areas. Improve the "sense of arrival" for park visitors as they are guided toward the primary Yosemite Village Day-use Parking Area.
- Reduce crowding at Bridalveil Fall by redesigning or otherwise improving trails, parking areas, and the viewing platform at the base of the fall; extend viewing area trail to a loop, if possible; improve accessibility and restrooms.
- Manage visitor use in Yosemite Valley to the alternative-specific user capacities (as described in Chapter 6). The user capacity management program, along with targeted improvements to the transportation system, will improve access and facilitate the public use and enjoyment of all river values, including river-related recreation.

Land Use and Facilities Management

"Development of Lands and Facilities" (Chapter 7) outlines the assessment of facilities and services located within this segment of the river corridor. As a result of this assessment, a number of facilities have been proposed for removal from the river corridor under all alternatives. In some alternatives, a facility may be removed, but the service would still be made available to visitors at a new location outside the corridor.

- Facilities removed from the river corridor under Alternatives 2-6 include the following:
  - The Ahwahnee Tennis Court
  - Curry Village Temporary Employee Housing (242 of the existing 262 beds at Huff House are removed under all alternatives)
  - Yosemite Village Concessioner General Office and Concessioner Garage
  - Happy Isles Snack Stand
  - Art Activity Center/Bank Building
  - Yosemite Lodge Post Office
  - Yosemite Lodge Bike Rental Stand
  - Yosemite Lodge Snack Stand
  - Yosemite Lodge Temporary Employee Housing (Highland Court and Thousands Cabins)
  - NPS Volunteer Office (at Yosemite Lodge, former wellness center)
- Facilities that would be re-purposed for non-commercial visitor use under Alternatives 2-6 include the following:
  - Yosemite Village Sports Shop
  - Yosemite Lodge Nature Shop
- Services that would be discontinued include:
  - Commercial horseback day rides in Yosemite Valley would be eliminated.

Preliminary drawings have been completed to illustrate the new locations for the Concessioner General Office and Concessioner Garage functions. See "Conceptual Site Drawings" at the end of this section for site details and design drawings.

Other facility-related actions that are common to Alternatives 2-6 include the following:

- Limited fleet maintenance functions would be provided at a redesigned Government Utility Building in the NPS Maintenance Yard, outside of the river corridor. Private vehicle repair service would be eliminated from Yosemite Valley.
- All Concessioner General Office functions would be moved to the location of the Concessioner Warehouse, outside of the river corridor.

Camping

- Alternatives 2-6 propose new walk-in campsites east of Camp 4 (35 sites) and west of Backpackers Campground (16 sites). Additionally the following reductions in the campsite inventory would occur from implementing the restoration actions listed above:
    - Backpackers Campground (-15 sites)
    - Lower Pines Campground (- 5 sites)
    - North Pines Campground (-14 sites)
    - Upper Pines Campground (-2 sites)

The alternatives vary in the number and type of campsites provided at other locations in Segment 2.

Lodging

- Alternatives 2-6 would remove 34 units at Housekeeping Camp that are located within the ordinary high-water mark.

The alternatives vary in the total number and type of lodging units provided in Segment 2.

Parking and Transit

- Redesign the parking lot at the Ahwahnee Hotel to provide proper drainage. Construct an additional 50-space parking lot to the east of the existing parking lot to replace parking lost due to rock-fall activity.
- Undertake a clean closure and stabilization process at the wilderness parking lot, which was once a landfill for Yosemite Park and Curry Company, and provide parking area for 190 vehicles.
- Remove ad hoc, unimproved roadside parking from natural areas where parking does resource damage or is in conflict with river values. Specifically, this includes 40 spaces along Cook's Meadow, 89 spaces along Sentinel Drive, 34 spaces along Superintendent's Straight, 85 spaces along Stoneman Meadow, and 14 spaces between Big Oak Flat Road/El Portal Road intersection and El Portal Bridge.
- Support the establishment of public transit service between Fresno/Oakhurst and Yosemite Valley.
- Discontinue the in-park shuttle service from Wawona to Yosemite Valley.
- Provide a shuttle bus stop in the vicinity of the El Capitan Crossover Bridge.

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

Ecological Restoration

- **Cascades Picnic Area: abandoned infrastructure** – Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.

Scenic Values

- Conduct a Visual Resource Management (VRM) contrast analysis (described in Chapter 5) to ensure that any future development would not exceed the contrast rating of 13.

Land Use and Facilities Management

- **Arch Rock Entrance Station** – The current configuration of the Arch Rock Entrance Station creates significant traffic queues on busy summer days, affecting visitor experience and the efficiency of park operations. Alternatives 2-6 propose redesigning or relocating this entrance station. The details of this change would be determined with additional planning, NEPA compliance, and the appropriate level of public involvement.

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

Ecological Restoration

- **Old El Portal: soil compaction around Valley oaks from parking** – Establish a valley oak recruitment area of at least one acre in Old El Portal in the vicinity of the existing Odger's bulk fuel storage area. De-compact soils, plant appropriate native understory plant species and treat invasive plants.
- **El Portal: river confined by riprap and road** – Develop best management practices for revetment construction and repair throughout this river segment. Vertical walls should be used wherever possible. Provide CalTrans with best management practices recommendations when repair/replacement is necessary in Segment 4.
- **El Portal NPS Maintenance and Administrative Complex: roadside parking** – Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River to natural conditions.
- **Abbieville and Trailer Village** – Remove abandoned infrastructure, asphalt, and imported fill to restore 9.3 acres within the 150-foot riparian buffer; re-contour and plant native riparian species and oaks. Designate appropriate river access points and formalize trail(s) to the river from the parking and camping areas.
- **Greenemeyer Sandpit: flood and riparian plant impacts from fill material** – Restore hydrologic function to 1.8 acres of floodplain and re-establish riparian habitat (Figure 8-11). Excavate 4,000 cubic feet of angular imported rock, concrete, asphalt, and soil to return floodplain elevation to the 20-50 year flood level. Restore upland areas to natural topography, utilizing some of the fill soils which would reduce the amount needed to move off-site. Re-contour topographic features. Reestablish native vegetation through propagation and planting of local native plants, including *Sambuccus mexicanus* (blue elderberry). Retain road for utilities and to allow for river access.

- **Bulk Fuel Storage** – Remove the Odger's bulk fuel storage facility from its current location in the floodplain; relocate this facility outside the river corridor. Remove non-native fill and de-compact soils; plant appropriate native understory plant species; treat invasive plants.



Figure 8-11: Greenemeyer Sandpit current conditions (left) and target braided channel and riparian habitat conditions (middle and right).

Cultural Values

In recognition of the high cultural significance of sites CA-MRP-0181/H, CA-MRP-0250/H and CA-MRP-0251/H for traditionally associated American Indian tribes and groups, these sites would be protected from any further development:

- **CA-MRP-0250/H** – Remove informal trails and non-essential roads.
- **CA-MRP-0251/H** – Remove informal trails.
- **CA-MRP-0181/H** – Solutions for addressing the abandoned infrastructure on the site and deterring visitor use in the area will be developed in consultation with traditionally-associated American Indian tribes and groups.

Land Use and Facilities Management

Alternatives 2-6 propose the addition of a public restroom in the vicinity of El Portal town center.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

Cultural Values

- **CA-MRP-0218** – Protect rock rings by completing the documentation of rock ring features, removing informal trails and charcoal rings, and informing wilderness visitors about the importance of protecting archeological resources. Restrict wilderness camping in the area of the site, as necessary.

User Capacity, Land Use and Facilities Management

- The finding of the Determination of Extent Necessary (Appendix L) for commercial use in wilderness would be implemented across the action alternatives and would include the following actions:

  - Disallow camping or travel by commercial groups more than ¼ mile from a maintained trail or public access road.
  - Limit all commercial stock trips to a 1:1.5 person-to-stock ratio. Accordingly, for every multiple of three persons (including employees), only two pack animals would be allowed, in addition to three riding stock.
  - Apply additional seasonal and weekend restrictions in the Mount Lyell zone, as specified in Appendix L.
- Private boating would be allowed with put-in and take-out locations at the discretion of the user. Generally, this kind of use would consist of short floats using craft that could easily be carried into this remote area. (The alternatives propose varying levels of use.)

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

Ecological Restoration

- **Wawona Water Conservation Plan –** Retain current water collection and distribution system, including impoundment; however, implement a water conservation plan which requires a minimum-flow for the South Fork, especially critical during late summer/early fall months.
- **South Fork Side Channels: abandoned infrastructure** – Remove abandoned metal pipes that dewater the terrace.
- **Wawona Campground: septic system** – Develop a waste water collection system. Build a pump station above the Wawona Campground to connect the facility to the existing waste water treatment plant.
- **Wawona Dump Station: proximity to river –** Design and construct RV dump station on a new sewer line near the campground entrance, at least 150 feet away from the river's ordinary high-water mark. Remove existing dump station and re-vegetate the area with native plants.
- **South Fork Wawona Picnic Area: river access and water quality –** Delineate picnic area and provide a path to the river to direct visitor use to more resilient areas.
- **Wawona Picnic Area: river access and water quality–** Harden the three steep river access points using rockwork or staircase construction to prevent further erosion. If needed, place fencing to direct visitors to these hardened access points. Provide a path to the river to direct visitor use to more resilient areas.
- **Wawona Maintenance Yard: riparian impacts –** Remove staged materials, abandoned utilities, vehicles, buildings, and parking areas from within the 150-foot riparian buffer and restore native ecosystem.

Cultural Values

- **Wawona Archeological District: visitor use impacts –** Increase monitoring frequency for affected sites. Increase management protection designed to counteract or minimize impacts, crafted to individual site specifications. At the districtwide level, amend National Register of Historic Places nomination to reflect district changes and impacts.
- **CA-MRP-0374 –** Remove informal trail, delineate access road, and reduce hazard fuels.
- **CA-MRP-0008/H –** Remove informal trails. Relocate stock camp away from archeological site to a location in the vicinity of the Wawona stables.

- **CA-MRP-0171172/254/516/H** – Remove informal trails and roadside parking.
- **CA-MRP-0168/0329/H –** Remove seven campsites from the Wawona Campground where use may impact this site.

Land Use and Facilities Management

The following actions regarding facilities in Segments 6 and 7 are common to Alternatives 2-6:

- Replace the existing public restroom facilities in the parking area next to the Wawona Store with larger restrooms to better accommodate visitor use levels.
- Increase the number of picnic tables to accommodate more picnicking near the Wawona Store.
- Redesign the Wawona Store bus stop (for both transit buses and shuttles) with seating and shelter to support transit and visitor use.
- Improve access to the Wawona Swinging Bridge on the south side of the river on public land; include comfort stations, waste disposal, and parking. Delineate parking and provide restrooms for users of the Flat Rock swimming hole.
- Remove roadside parking between the store and Chilnualna Falls Road to address resource and safety concerns.
- Remove six campsites at the Wawona Campground that are within 100 feet of the river. The total number of campsites provided at the campground varies by alternative.
- Move the stock camp to a location in the vicinity of the Wawona stables.

Under Alternatives 2-6, the NPS Wawona Maintenance Yard would be redesigned and improved as follows:

- Construct a 4,300 square foot building and grounds maintenance facility, a 6,500 square foot combined structural and wildland fire station, and a 4,000 square foot roads maintenance facility to replace antiquated, inadequate, or temporary facilities.
- Remove the existing wooden utility structures that were originally built by the Civilian Conservation Corps.
- Remove staged materials, abandoned utilities, vehicles, and parking from the 150-foot riparian buffer at the Wawona Maintenance Yard, and restore native ecosystem.

Conceptual Site Drawings and Details Common to Alternatives 2-6

Parking along El Portal Road from the Big Oak Flat Road to Pohono Bridge

Within Segment 2, the 0.6-mile road segment of El Portal Road contains a number of non-delineated, dirt roadside pullouts between Pohono Bridge and the intersection of the Big Oak Flat Road. Five of the larger pullouts are located on the south side of the road immediately adjacent to the Merced River, while one is located on the north side of the road just west of the intersection with Northside Drive and Southside Drive. The use of these dirt pullouts and associated informal trails on the south side of the road is causing erosion and vegetation trampling in some locations on the riverbank. Three of the pullouts on the south side of the road would be paved to provide parking for a limited number of vehicles. Curbs would be constructed to prevent further encroachment on the river. The remaining roadside and riverbank soils would be de-compacted and restored to natural conditions. The existing paved pullout on the north side of the road just west of the intersection with Northside/Southside Drive would also be improved to accommodate

six vehicles for a total parking capacity of 26 vehicles along this section of road. Curbs would be installed along the remaining south side of the road shoulder to prevent resource damage. Of the 13 existing drainage culverts along this segment of the road, two would be removed and the remainder either retained or reconstructed in a manner that is consistent with their historic character and function. (No site drawing is provided to illustrate these actions.)

NPS Maintenance Yard

The NPS Government Utility Building and Maintenance Yard, located just north of Yosemite Village, is the primary operations center for utilities, visitor and resource protection, and maintenance. It consists of a large, central operations building, multiple smaller outbuildings, administrative fueling station, NPS stables, yard, and search and rescue headquarters. Eleven of the buildings and sheds are contributing elements to the Yosemite Valley Historic District. In order to improve circulation at the complex and to provide parking spaces for larger vehicles, six of the non-historic outbuildings would be removed or relocated as NPS operations are further consolidated within existing facilities in El Portal. The historic Government Utility Building would be adapted to accommodate light maintenance and repair for park shuttle busses and concessioner service vehicles. A new roads and trails maintenance building would be built that would house essential winter park operations equipment, such as snow removal and sand spreading vehicles and equipment. The new building would include four vehicle bays with support functions. All anticipated development activities and improvements would occur within the existing 4.75-acre site. The NPS maintenance area lies outside the Merced River corridor, but proposed modifications are addressed herein as connected actions.

Concessioner General Office

The existing 18,000 square foot Concessioner General Office building located in Yosemite Village, just south of the Village Store parking lot, would be removed under all alternatives to allow redesign and expansion of visitor parking, improved traffic and pedestrian circulation, and resource restoration. The park has developed two alternatives that would allow the concessioner to modify the existing central warehouse, with a limit of approximately 5,000 square feet in new construction of replacement office space and modifications to the existing building's interior. The existing Concessioner Central Warehouse lies outside the Merced River corridor, but proposed modifications are addressed herein as connected actions.

Alternatives 2-4

The office space would be replaced by reconfiguring the interior of the existing Concessioner Maintenance and Warehouse building. The existing structure would be updated to include office space on a mezzanine floor. Additionally, nearby concessioner employee housing would be converted to office use. The residential needs of employees displaced from housing facilities would be accommodated in other buildings in Yosemite Valley.

Additional parking spaces would be provided near the facility to accommodate the increased occupancy of the remodeled worksite. Specific locations being considered for parking include formalizing approximately 17 spaces along Village Drive, six spaces to the northeast of the warehouse building, approximately 16 spaces along Boulder Lane, approximately 15 spaces along the north side of Tenaya Way, and an additional

15 spaces north of the existing auditorium. Development of parking spaces behind the auditorium would require the removal of one existing employee residence.

Alternatives 5-6

Under Alternative 5 (Preferred), the office space would be replaced by reconfiguring the interior of the existing Concessioner Central Warehouse building. A 5,000 square foot addition to this building would also be constructed. The expansion of the building would require the elimination of 10 to 12 parking spaces that would be replaced nearby along Village Drive.

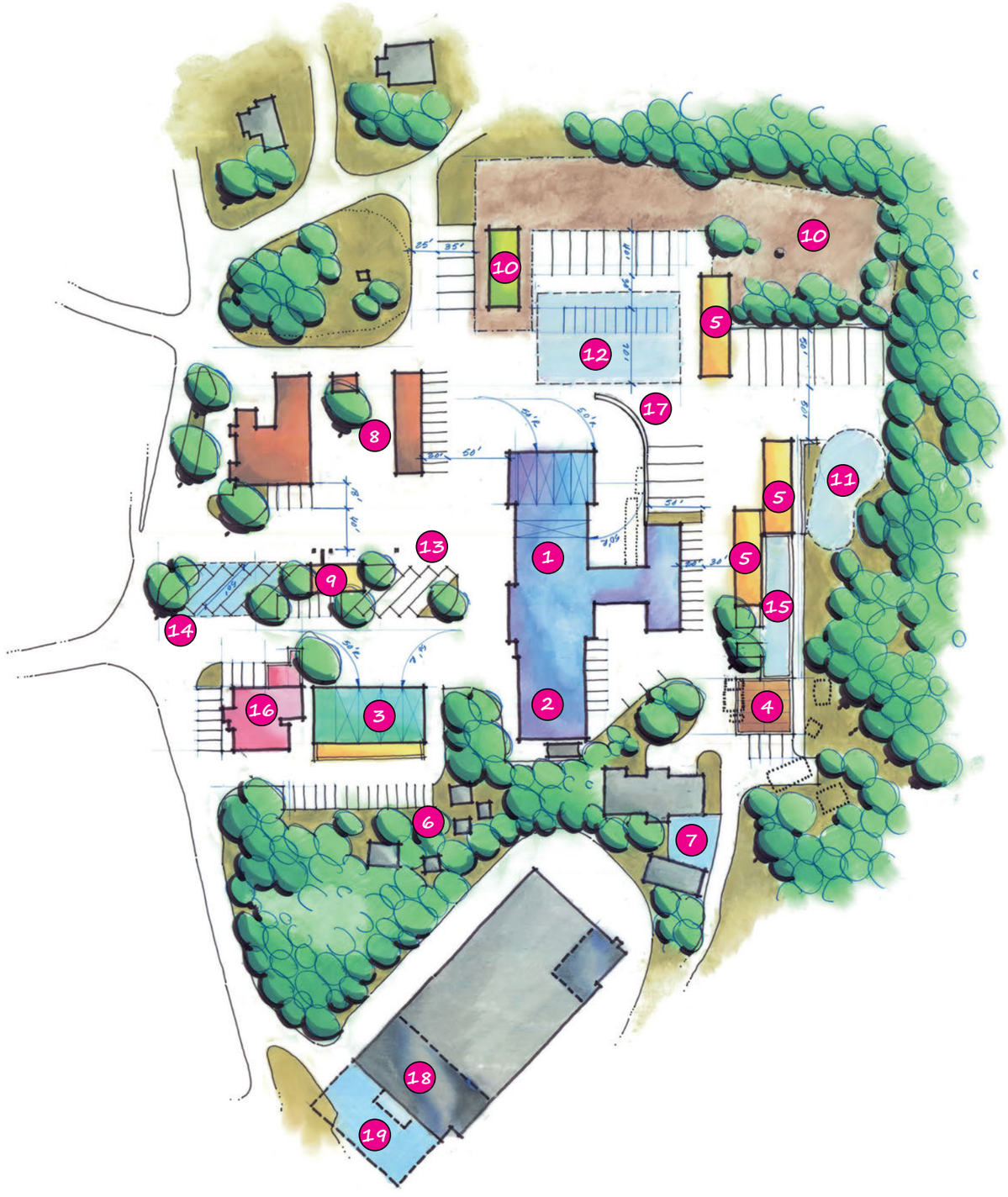
Additional parking spaces would be provided near the facility to accommodate the increased occupancy of the remodeled worksite. Specific locations being considered for parking include formalizing approximately 17 spaces along Village Drive, six spaces to the northeast of the warehouse building, approximately 16 spaces along Boulder Lane, approximately 15 spaces along the north side of Tenaya Way, and an additional 15 spaces north of the existing auditorium. Development of parking spaces behind the auditorium would require the removal of one existing employee residence.

Wawona Maintenance Yard

This project includes the design and construction of site improvements (including infrastructure and utilities additions) and for a wildland fire and operations building at Wawona, not to exceed 6,500 square feet. This facility will include offices, three garage bays to house fire apparatus and vehicles, and maintenance work space to support wildland fire operations throughout the park. This facility may also include a sleeping area for an engine crew (of five persons) and will serve as an Incident Command Post for extended emergency incidents in the area. The facility will be constructed to meet all applicable codes and standards for general building construction, as well as those specific to fire stations to provide for the health and safety of fire personnel.

The existing fire station is located in a building that was constructed by the Civilian Conservation Corps in 1934, to store tools and equipment; the building was later modified to accommodate fire apparatus. The original building was neither designed nor intended to be a fire station and is not of adequate size to handle these operations. It also does not meet life-safety and egress building requirements, National Fire Protection Association (NFPA) standards, or seismic codes and standards for fire stations. Modifications have been made in the past to house Yosemite's existing fire engines and to accommodate operations staff. It has been determined that future modifications will not be cost effective. Completion of this project will consolidate fire management operations (currently operating out of nearby modular structures, to be removed) and emergency response functions into one building. Construction of this station will ensure that there is a facility able to house vehicles, equipment, and personnel necessary for the fire and emergency response capability required in Wawona, surrounding wildlands, and the rest of Yosemite National Park.

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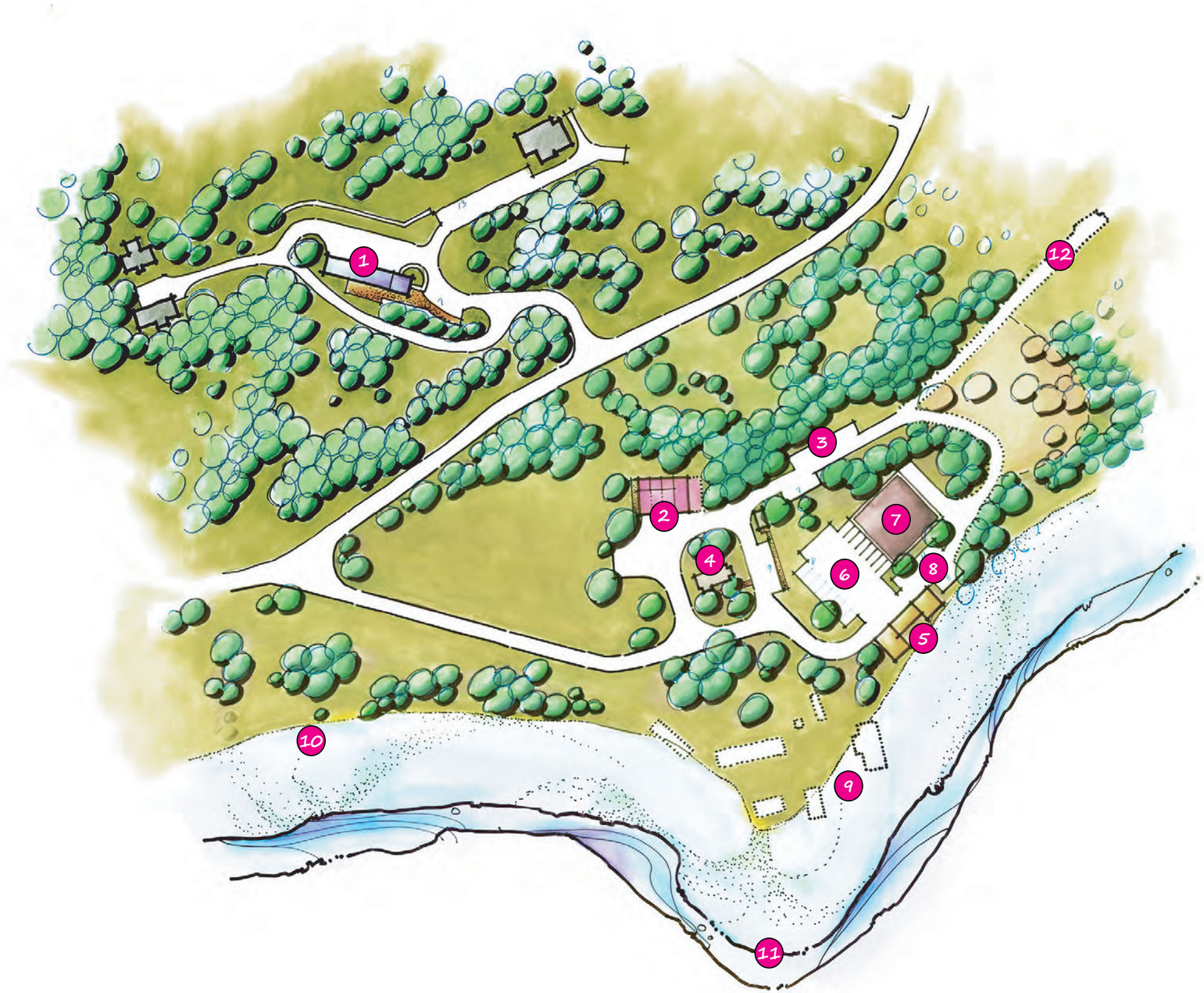
1. Relocate shuttle bus maintenance to existing service bays in the Government Utility Building.
2. Maintain NPS use and operation of historic Government Utility Building.
3. Construct a 4,500 square-foot building with light-duty service bays with administrative office space. Provide covered parking for road-clearing vehicles and equipment.
4. Relocate outdoor vehicle temporary storage yard.
5. Rehabilitate covered storage buildings for more efficient use.
6. Retain historic Camp 1 employee housing unit complex.
7. Construct a structural, load-bearing pad for emergency generator; improve access road.
8. Retain search and rescue operations.
9. Retain concessioner fueling station.
10. Retain NPS stables and corrals.
11. Maintain outdoor sand storage area for winter use.
12. Delineate flex parking and equipment staging area.
13. Delineate short-term, high-turnover shuttle bus parking spaces.
14. Provide additional shuttle bus parking or designated snow storage area.
15. Outdoor storage area to be re-organized and improved.
16. Maintain utility building use with park partner.
17. Reconstruct retaining wall to provide for bus access to existing bay door.
18. Construct a 10,000 square-foot mezzanine in the existing Concessioner Maintenance Building and Warehouse. Relocate Concessioner General Office from Yosemite Village Day-use Parking Area; Alternatives 2, 3, 4 and 5 only.
19. Construct a 4,000 square-foot office addition to the Concessioner Maintenance Building and Warehouse for Concessioner General Office use; Alternative 6 only.

NORTH

Alternatives 2,3,4,5,6
Conceptual Site Drawing for Yosemite Valley Maintenance Area
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Relocate the existing Building and Grounds Maintenance Facility to a new facility outside the 150-foot riparian buffer. Construct a 4,500 square-foot building consisting of storage and office administrative space. Provide 20 parking spaces for employees and service vehicles.

2. Construct a two-story wildland fire facility with three enclosed engine bays, administrative office space and meeting space, not to exceed 6,500 square feet. Provide access driveways, hose drying rack, and snow storage area.

3. Remove modular structures currently used as wildland fire facility and build 20 parking spaces for employee use (including seasonal staff).

4. Maintain existing use of the Wawona District interpretive services field office. Consider relocation of campground reservation center to Wawona Campground.

5. Construct a Wawona District Roads Maintenance Facility headquarters consolidated into one 4,000 square-foot building for a machine shop and equipment storage with administrative office space.

6. Provide eight 15-by-30-foot oversized vehicle and heavy equipment parking spaces and eight 12-by-20-foot material stockpile bins accessed by a common drive aisle.

7. Provide a 200-by-200-foot general outdoor storage area with a covered sand storage shed.

8. Provide 15 parking spaces for visitor and employee use.

9. Remove existing wooden buildings used for Buildings and Grounds, Roads Maintenance and fire apparatus storage from the 150-foot riparian buffer.

10. Relocate stock camp from sensitive resource area along the river to an alternative site located outside the riparian buffer but in the same general vicinity.

11. Protect and enhance area within the 150-foot riparian buffer.

12. Maintain access to green waste transfer station.

NORTH

These drawings are intended to illustrate where facilities would be removed, relocated, or constructed according to actions more fully described by the project alternative. The drawings do not represent a final proposal. The precise locations of structures and other facilities are subject to change pending archaeological investigation prior to design or construction. More detailed design and construction documents would be developed consistent with the general concepts presented here.

Alternative 2 through 6
Conceptual Site Drawing for

Wawona Maintenance Area

Yosemite National Park
United States Department of the Interior • National Park Service

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ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION

Overview

The guiding principles of Alternative 2 would include building removal and restoration within the 100-year floodplain, removing infrastructure that is not essential to resource-related recreation. The visitor experience would be more self-reliant, as fewer commercial services would be available. Visitor-use levels would be managed to allow for visitor experiences free of crowding and traffic congestion.

Management actions in Alternative 2 would:

- Restore 342 acres of meadow and riparian habitat.
- Slightly reduce the campsites inventory in all river segments (-8%) and in Yosemite Valley (-3%).
- Significantly reduce lodging inventory at the Merced Lake High Sierra Camp (-100%) and in Yosemite Valley (-46%).
- Reduce parking for Yosemite Valley day use (-23%).
- Minimize commercial services provided by the park's primary concessioner.
- Make significant changes to traffic-circulation patterns in Yosemite Valley to accommodate ecological restoration goals and to reduce traffic congestion.
- Establish a user capacity of 12,570 people at one time for Yosemite Valley, with peak visitation estimated at 13,900 visitors per day.
- Continue to manage overnight use through reservation systems for lodging and camping and the wilderness permit system.
- Manage user capacity for East Yosemite Valley using a day-use parking reservation system that would be required throughout the summer season.

Under Alternative 2, visitors to Yosemite Valley would experience changes in traffic circulation and roadway design, with priority given to adjustments needed to allow for ecological restoration. Meadow restoration would be accomplished by removing road segments through Ahwahnee and Stoneman Meadows. Visitors would experience a clear "sense of arrival" at a pedestrian-friendly parking area in Yosemite Village. This would be accomplished by moving parking away from the river, removing employee housing and administrative buildings, and redesigning roads and intersections in proximity to the Village. With limited visitation and a decrease in traffic volume, Southside Drive would be converted to a two-way road. During the peak summer season, parking reservations would be required for day-use visitors wishing to bring private vehicles into the east end of Yosemite Valley.

At Curry Village, a number of new duplex and four-plex lodging units would be available in addition to the tent cabins in the Curry Village Historic District. All tent cabins in the Boys Town area would be removed. The rental stands for bicycles and rafts would be removed, along with the ice skating rink. Food service, groceries, the swimming pool, and the mountaineering shop would remain. A limited number of private boaters would still be able to raft or kayak in Yosemite Valley, with additional reaches of the Merced River opened to boating. Cyclists would be able to ride bicycles in Yosemite Valley with personal equipment or equipment rented outside of the park. The stables near Curry Village would be removed and commercial horseback day rides discontinued. Private horseback riding would continue in Yosemite Valley and further into the high country. Temporary housing at Curry Village (Huff House) would be replaced with permanent

housing units in the same location. All lodging and associated facilities would be removed from Housekeeping Camp and the area would be repurposed for improved beach access and day use. The Happy Isles snack stand would also be removed.

Overnight accommodations would be focused on camping. All overnight lodging units would be eliminated at Yosemite Lodge, although some food and limited retail services would remain. Camping would continue to be provided at Lower and Upper Pines, the North Pines campground would be removed, and Backpackers Campground would be relocated. A new walk-in campground would be constructed to replace the Yosemite Lodge, keeping the number of campsites in the Valley similar to the current level. The bike rental, pool, post office, snack stand and gift shops at Yosemite Lodge would be removed, with parking retained for day use. The pool and tennis courts would be removed at the Ahwahnee Hotel.

The West Valley would retain its overall natural character, with limited infrastructure, and continue to serve as a destination for lower impact recreational activities such as hiking, rock climbing, photography, and scenic viewing.

Those visitors hiking to the Wilderness along the Merced River corridor would be able to camp with a permit. All facilities at the Merced Lake High Sierra camp would be removed, and the adjacent backpacker's camp would be converted to dispersed camping.

Transit options would be improved for visitors travelling to Wawona, with a new bus run from Fresno to Yosemite Valley along Highway 41. Lodging would still be available at the Wawona Hotel, but the golf course and tennis courts would be removed. The Wawona campground would be reduced in size and commercial horseback day rides would no longer be provided at the Wawona stables. Private boating would be allowed on the South Fork Merced.

Actions to Protect and Enhance River Values

Alternative 2 would protect and enhance river values with significant ecological restoration directed to enhance the connection between the river and its floodplain. It would prioritize the enhancement of ecological river values, including large portions of the 100-year floodplain and riparian and meadow habitat, over the retention of existing infrastructure and circulation patterns. In addition to actions common to the other action alternatives, Alternative 2 would restore the areas currently occupied by the Merced Lake High Sierra Camp, campsites and lodging units in Yosemite Valley, the Wawona Golf Course, and the Concessioner Stables in Yosemite Valley, and it would create a large valley oak habitat protection area in El Portal. The alluvial processes of the river would be enhanced by removing three bridges that constrict flow during high-water events. The hydrologic connectivity of meadows to the riparian floodplain would be enhanced through the removal of certain road segments that bisect meadows.

Cultural and scenic values would be protected and enhanced as described under "Actions Common to Alternatives 2-6" (beginning on page 8-47). Certain recreational values would be enhanced with the removal of the Merced Lake High Sierra Camp and improvement in traffic circulation would benefit all visitors to Yosemite Valley. Table 8-10 provides a summary of the actions that would occur under Alternative 2 to protect and enhance river values.

TABLE 8-10: ADDITIONAL ACTIONS TO PROTECT AND ENHANCE RIVER VALUES, ALTERNATIVE 2

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	342 acres: 176 acres (common to all) plus an additional 166 acres (refer to Appendix E for specific locations)
Riprap to be Removed	6,664 linear feet: 5,700 linear feet (common to all) plus an additional 964 feet (refer to Appendix E for specific locations)
Segment 1: Wilderness above Nevada Fall	
Riparian Buffer / Floodplain	▪ Remove the Merced Lake High Sierra Camp and ecologically restore the site.
Segment 2: Yosemite Valley	
Free Flow / Geological/ Hydrological Values	▪ Remove Ahwahnee, Sugar Pine, and Stoneman bridges to enhance the alluvial processes of the river.
Riparian Buffer / Floodplain	▪ Ecologically restore 35.6 acres of floodplain at the former Upper and Lower River Campgrounds. ▪ Move Yosemite Village Day-use Parking Area parking north outside the 10-year floodplain. ▪ Ecologically restore 25 acres of 100-year floodplain at the North Pines Campground, Backpackers Campground, Yellow Pine Administrative Campground, and part of the Lower Pines campground. ▪ Ecologically restore large areas of Yosemite Lodge and Housekeeping Camp. ▪ Ecologically restore the Concessioner Stables, Ahwahnee Row, and Tecoya housing area.
Meadow Restoration	▪ Remove 900 feet of Northside Drive through the Ahwahnee Meadow to enhance connectivity of the meadow and floodplain. ▪ Remove 1,335 feet of Southside Drive through Stoneman Meadow to enhance connectivity of the meadow and floodplain.
Segment 7 : Wawona	
Meadow Restoration	▪ Ecologically restore the 42-acre Wawona Golf Course to meadow habitat.
Recreational Values	
Segment 1: Wilderness above Nevada Fall	
Wilderness Recreation	▪ Enhance Wilderness character by removing the Merced Lake High Sierra Camp and converting this area to designated Wilderness. ▪ Reduce zone capacities and convert overnight use to dispersed camping.

User Capacity, Land Use and Facilities Management

Alternative 2 would provide a more self-reliant visitor experience, with a marked reduction in commercial services and facilities. As a result, peak visitor use levels would be lower than current conditions. Table 8-11 provides a summary of user capacities by type and location of use.

Visitor Activities and Services

Alternative 2 would significantly reduce commercial facilities and services. Changes to facilities and services would include the removal of redundant retail services and snack stands, as well as the elimination of commercial horseback day rides from Yosemite Valley and Wawona. Alternative 2 would also remove bike rentals, raft rentals, the ice skating rink, the grocery store at Housekeeping Camp, and two swimming pools in Yosemite Valley.

TABLE 8-11: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 2

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 2	
	Unit Type	Units	People	Units	People
Wilderness Above Nevada Fall					
Visitor Overnight Use	Zone Capacities & Beds	380	380	195	195
Visitor Day Use	Day Hikers	350	350	350	350
Employee Housing (in camps)	Employee Beds	15	15	5	5
Administrative Day Use	People on Day Patrols	5	5	5	5
Yosemite Valley					
Visitor Overnight Use	Rooms & Campsites	1,500	6,564	1,006	4,758
Visitor Day Use	Parking Spaces & Buses		11,727	-	6,819
Employee Housing	Employee Beds	1,315	1,315	658	658
Administrative Day Use	Parking Spaces	166	332	166	332
Merced Gorge					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	180	869	180	869
Employee Housing	Employee Beds	9	9	9	9
Administrative Day Use	Parking Spaces	2	4	2	4
El Portal					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	214	740	214	740
Employee Housing	Employee Beds	220	427	599	801
Administrative Day Use	Parking Spaces	610	1,220	610	1,220
South Fork Above Wawona					
Visitor Overnight Use	Zone Capacities	20	20	20	20
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1
Wawona					
Visitor Overnight Use	Rooms & Campsites	203	865	171	673
Visitor Day Use	Parking Spaces & Buses	-	1,295	-	1,321
Employee Housing	Beds	121	121	121	121
Administrative Day Use	Parking Spaces	30	60	30	60
South Fork Below Wawona					
Visitor Overnight Use	Zone Capacities	-	-	-	-
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1

Visitor Overnight Capacity

Camping

Under Alternative 2, the campsite inventory in the Merced Wild and Scenic River corridor, including Yosemite Valley, would be reduced by approximately 8% as a result of natural and cultural resource protection measures. All campsites within the 100-year floodplain would be removed. Campsite losses would be offset by the addition of walk-in camping at Yosemite Lodge, east of Camp 4, and west of Backpackers Campground. Under Alternative 2, the total number of campsites in Yosemite Valley would be 450 sites, and the total number of campsites available in the corridor would be 521 sites. Table 8-12 provides a summary of the proposed changes to camping.

TABLE 8-12: CAMPING FACILITIES – ALTERNATIVE 2

Existing Locations	Alt 1 (No Action)	Alt 2	Details
Backpackers	25 sites	0 sites	25 walk-in sites removed from the 100-year floodplain; 16 of these will be relocated west of Backpackers
Camp 4	35 sites	35 sites	No change to this National Historic Register Site
Lower Pines	76 sites	44 sites	32 sites removed from the 100-year floodplain
North Pines	86 sites	0 sites	86 sites removed from the100-year floodplain
Upper Pines	240 sites	216 sites	22 sites removed from the 100-year floodplain and 2 sites for cultural resource concerns
Yellow Pine Administrative	4 sites	0 sites	4 group administrative sites removed from the 100-year floodplain
Wawona Campground	99 sites	67 sites	32 sites removed from the 100-year floodplain or in culturally sensitive areas
Total Existing Locations	**565 sites**	**362 sites**	
New Locations	**Alt 1 (No Action)**	**Alt 2**	**Details**
West of Backpackers	0 sites	16 sites	16 walk-in sites relocated from Backpackers Campground to less sensitive area outside 100-year floodplain
East of Camp 4	0 sites	35 sites	35 walk-in sites constructed in area east of Camp 4
Yosemite Lodge walk-in	0 sites	104 sites	100 walk-in sites and 4 group sites constructed
Abbieville / Trailer Village	0 sites	4 sites	4 group administrative sites constructed in El Portal to replace Yellow Pine administrative sites
Total New Camping	**0 sites**	**159 sites**	
Total Camping in Corridor	565 sites	521 sites	

Lodging

In-park lodging availability would be reduced by approximately 43% relative to existing conditions. Management actions related to lodging would focus on removing all overnight lodging at Yosemite Lodge, Housekeeping Camp, and from the Yosemite Wilderness. New permanent lodging would be constructed in Curry Village to partly offset the loss of year-round accommodations at Yosemite Lodge. As a result of these actions, the in-corridor lodging inventory would be reduced from 1,160 units to 660 units. Table 8-13 provides a summary of the proposed changes to lodging and the reasons for those proposed changes.

TABLE 8-13: LODGING FACILITIES – ALTERNATIVE 2

Wilderness	Alt 1 (No Action)	Alt 2	Details
Merced Lake High Sierra Camp (MLHSC)	60 beds (22 units)	0 beds	Remove all infrastructure and expand dispersed camping into re-purposed MLHSC area
Yosemite Valley	**Alt 1**	**Alt 2**	**Details**
Ahwahnee Hotel	123 rooms	123 rooms	No change at this National Historic Landmark
Housekeeping Camp	266 units	0 units	Remove all units from 100-year floodplain
Curry Village	400 units	433 units (290 canvas tent cabins and 143 hard-sided units)	▪ Retain 290 canvas tent cabins ▪ Retain 47 hard-sided cabin-with-bath units ▪ Retain 18 units at Stoneman House ▪ Construct 78 hard-sided units in Boys Town
Yosemite Lodge	245 rooms	0 rooms	Remove entire lodging complex, including those units in the 100-year floodplain
Wawona	**Alt 1**	**Alt 2**	**Details**
Wawona Hotel	104 rooms	104 rooms	No change at this National Historic Landmark
Total Lodging in Corridor	**1,160 units**	**660 units**	

Parking Inventory and Access Improvements

Parking capacity for day-use in Yosemite Valley would be reduced by 23% relative to current levels. Day-use capacity would be actively managed and potentially restricted during season (May through September). A day-use parking reservation system would be implemented in this alternative for East Yosemite Valley during the peak summer season. Table 8-14 provides a summary of the total number of day-use parking spaces provided in each river segment.

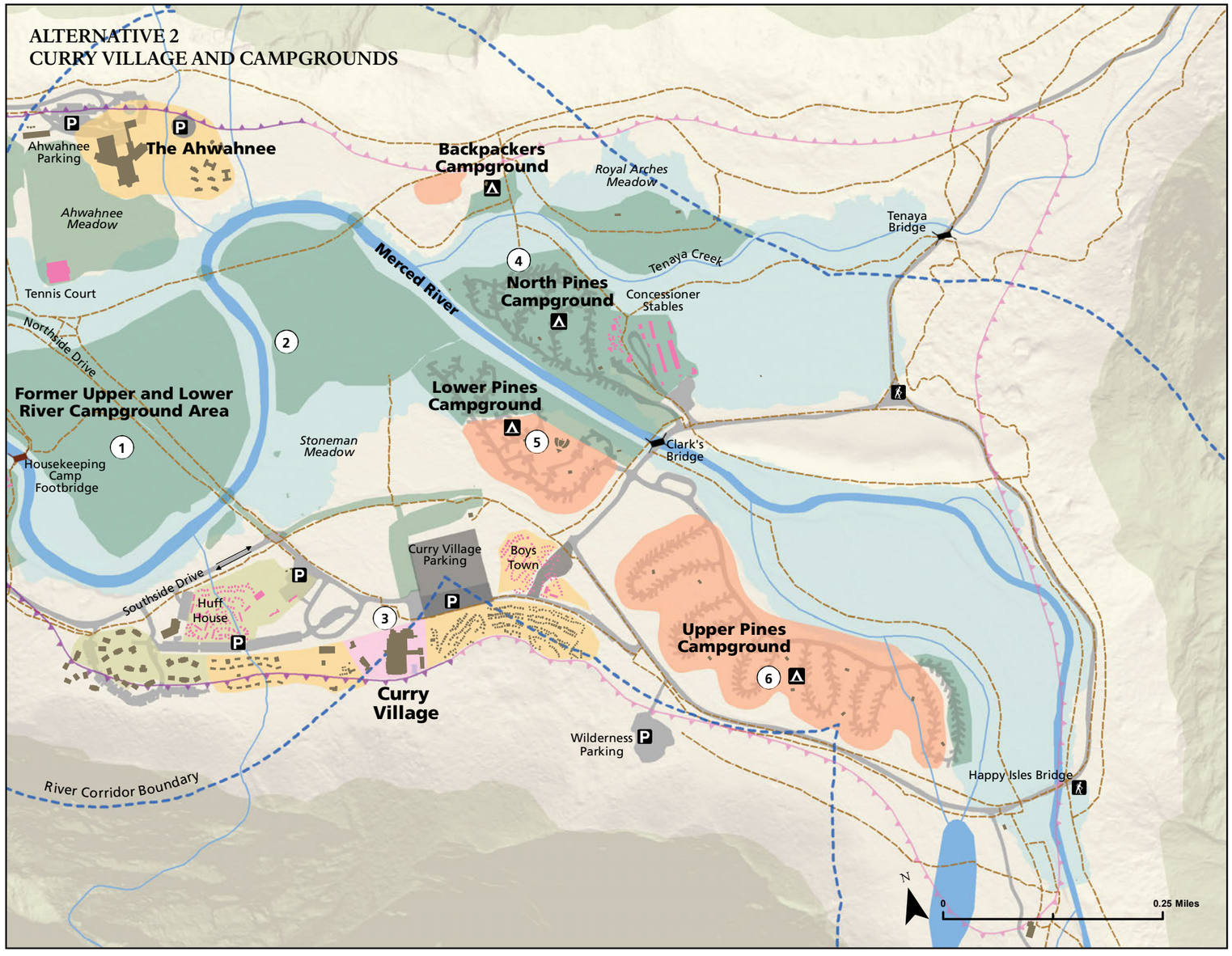
TABLE 8-14: NUMBER OF DAY-USE PARKING SPACES BY SEGMENT, ALTERNATIVE 2

Location	Alt 1 (No Action)	Alt 2
Segment 2: Yosemite Valley	2,337 spaces	1,800 spaces
Segment 3: The Gorge	180 spaces	180 spaces
Segment 4: El Portal	214 spaces	214 spaces
Segment 7: Wawona	290 spaces	290 spaces
Total Parking	**3,021 spaces**	**2,484 spaces**

The most significant changes to parking and traffic circulation would take place in the vicinity of the Yosemite Village Day-use Parking Area and Yosemite Lodge. Day-use visitors would find a total of 550 parking spaces within a redesigned parking area at this location. At Yosemite Lodge, proposed changes include a new day-use parking area north of the core visitor service area, and additional overnight parking west of Yosemite Lodge to serve new camping areas. The parking inventory for East Yosemite Valley (including day, overnight, and administrative uses) would total 4,000 spaces.

Transit services would remain unchanged on the Highway 140, Highway 120 West, and Highway 120 East corridors; one round-trip run per day would be added to the Highway 41 corridor. Within-park shuttle services would remain unchanged with the exception of the shuttle service between Wawona and Yosemite Valley. This service would be discontinued due to the increase in public transit on this corridor. The East Valley shuttle would increase in frequency, with intervals of five minutes.

ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

1. Former Upper and Lower River Campground Area
   - Ecological Restoration: Restore 35.6 acres of floodplain habitat within the 10-year floodplain. Restore natural floodplain topography by removing remaining asphalt and re-establishing seasonal channels, and revegetate with native plants. Remove Lower River amphitheater. Temporarily fence restoration areas to allow for recovery.

2. River Reach between Bridges
   - Ahwahnee and Sugar Pine Bridges: Remove the Ahwahnee and Sugar Pine Bridges (and associated berm) to enhance the free-flowing condition of the river. Restore area to natural conditions. Re-route the multiple-use trail north of the river.
   - Stoneman Bridge: Remove Stoneman Bridge to enhance free-flowing condition of the river. Restore area to natural conditions. Reconfigure part of Southside Drive as a two-way road, remove the road segment through Stoneman Meadow, and redesign intersection at Sentinel and Southside Drive.

3. Curry Village Area
   - Ecological Restoration: Remove Southside Drive through Stoneman Meadow to enhance the hydrologic connectivity of the meadow. Re-align road through the Boys Town area to facilitate restoration of Stoneman meadow. Extend meadow boardwalk (up to 275 feet) to Curry Village.
   - Lodging: Total would be 433 guest units, including: 290 tents in Curry Village retained; 78 hard-sided units constructed in Boys Town; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.
   - Curry Orchard Parking Area: Re-design the Curry Orchard parking area to formalize 420 parking spaces. Re-design will incorporate best management practices to increase hydrologic flows into Stoneman Meadow and protect water quality. Remove apple trees to mitigate human-bear interactions, and plant native vegetation.
   - Huff House Housing: Remove temporary housing at Huff House. Construct 16 buildings, housing 164 employees, using the same dormitory prototype.
   - Curry Village Day-use Parking: Within the existing disturbance footprint at the Curry Village Ice Rink area, provide visitor day-use and employee commuter parking for 105 vehicles.

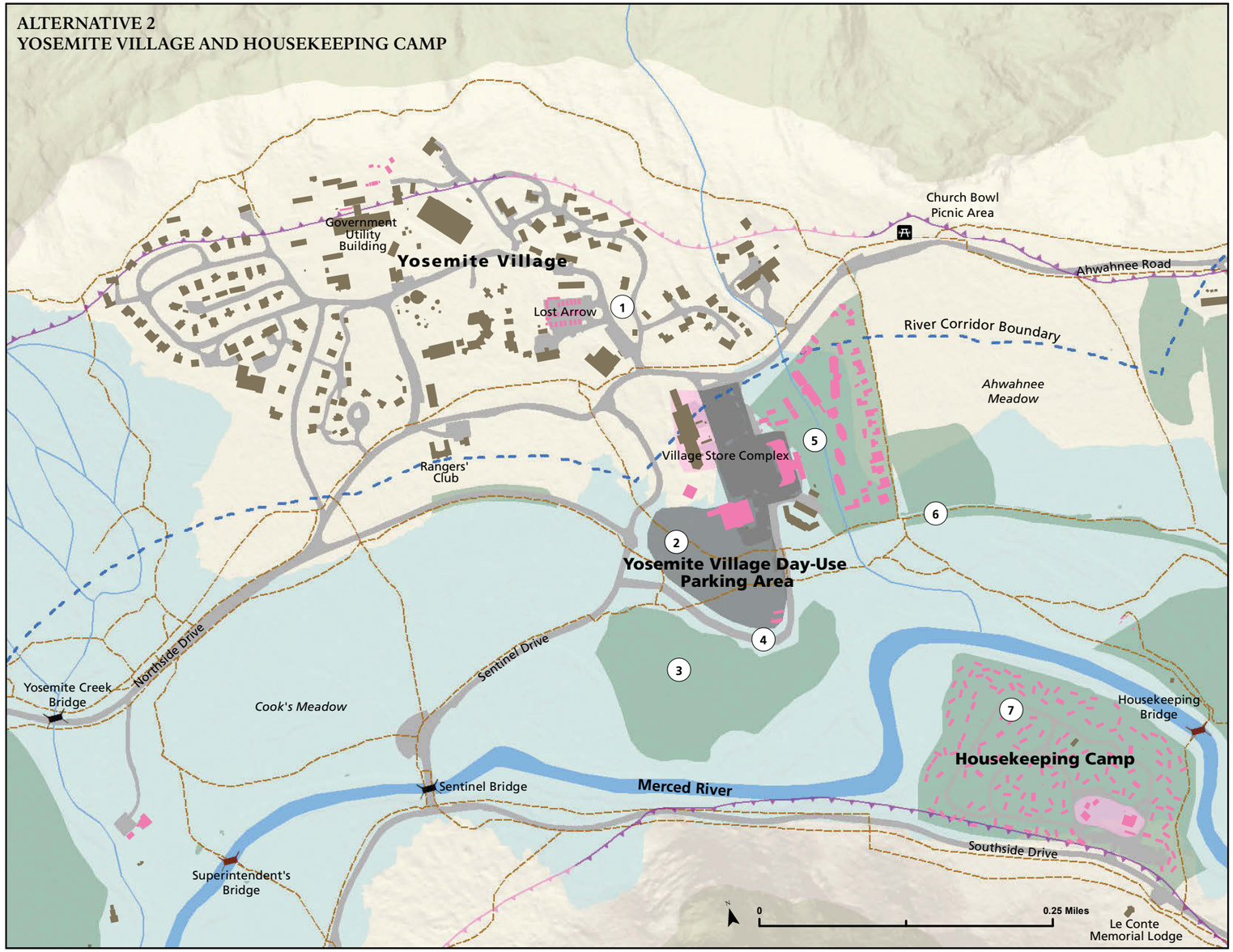
4. North Pines Campground Area
   - North Pines Campground: Remove all 86 campsites in the 100-year floodplain and restore to native floodplain/riparian habitat.
   - Backpackers Campground: Remove all 25 walk-in sites in the campground, of which 21 are within the 100-year floodplain. Partially replace with a new campground with 16 walk-in sites west of Backpackers Campground.
   - Concessioner Stables: Ecologically restore the stables area, located within the 100-year floodplain. Remove associated housing (49 beds).

5. Lower Pines Campground Area
   - Campground Sites: Retain 44 campsites and remove 32 campsites within the 100-year floodplain.

6. Upper Pines Campground Area
   - Campground Sites: Retain 216 campsites. Remove 22 sites to restore the 100-year floodplain and an additional two sites to protect cultural resources.

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ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION



Legend

- Campgrounds
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- Parking Area
- Trailheads
- Road bridge
- Footbridge
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- Stream
- Contour
- Trails
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- Inferred Rock-fall Hazard Line
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- Visitor Services
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- Remove Building
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- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Lost Arrow: Remove temporary employee housing. Re-establish an administrative parking lot to accommodate 50 spaces.

2. Yosemite Village Day-use Parking Area: Move the parking area day-use parking northward outside of the dynamic 10-year floodplain. Formalize the Yosemite Village Day-use Parking Area using best management practices to protect water quality to accommodate 550 parking places.

3. Floodplain and Riparian Ecological restoration at Yosemite Village Day-use Parking Area: Remove fill material and restore meadow and floodplain habitat within the dynamic 10-year floodplain.

4. Pedestrian/Vehicle Conflicts: Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area. Consolidate parking to the north of the road and provide walkways leading to Yosemite Village separating vehicle and pedestrian traffic and eliminating conflicts and associated traffic congestion. Re-designed traffic circulation patterns would not require roundabouts or pedestrian road crossings.

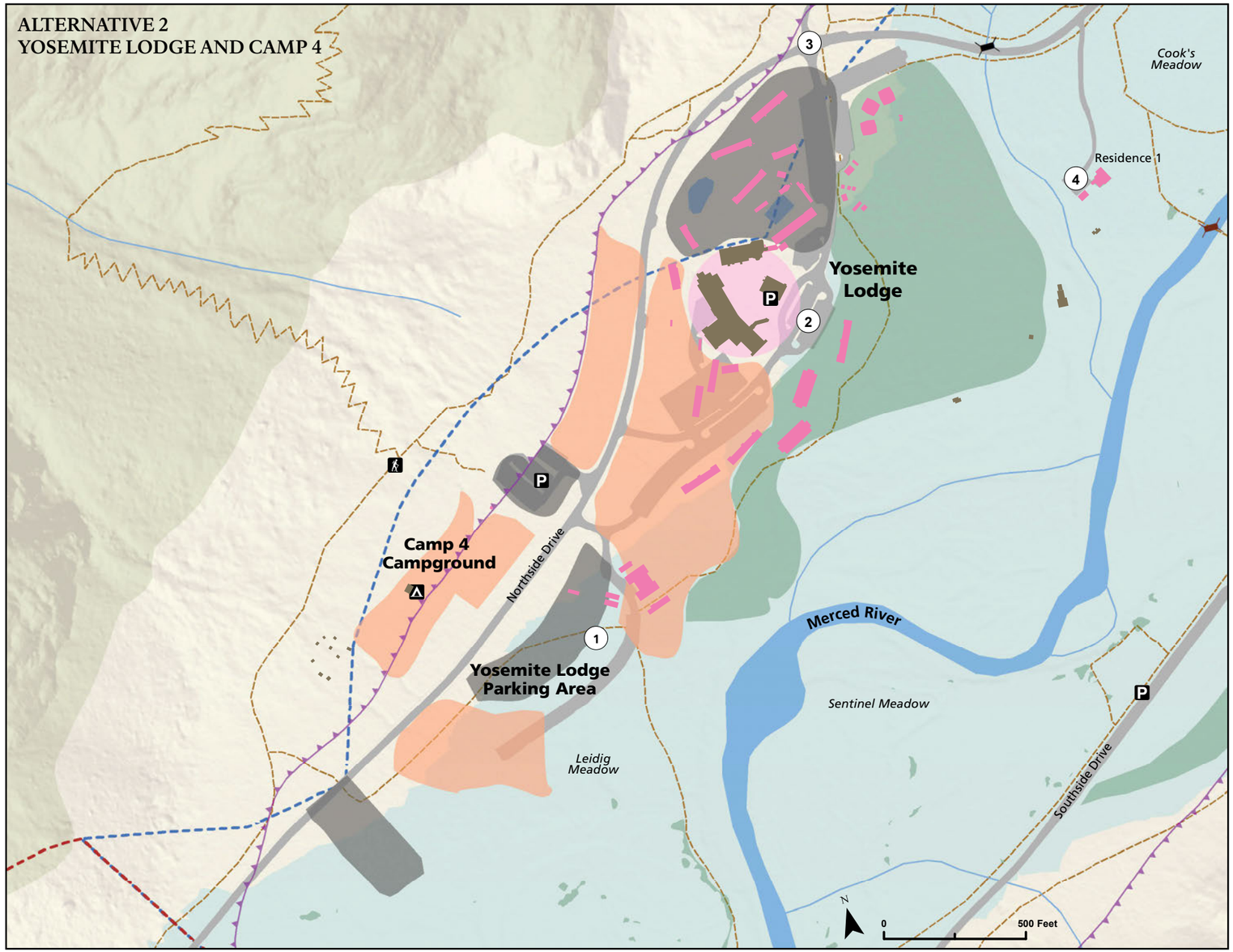
5. Indian Creek Restoration: Remove housing and development in the 100-year floodplain between Village Store and Ahwahnee Meadow. Recontour topography, restore stream hydrology, decompact soils, and plant native meadow vegetation.

6. Ahwahnee Meadow Restoration: Remove 900 feet of road through Ahwahnee Meadow and relocate the bike path to the south, restoring hydrologic connectivity between the meadow and river. Re-route the formal foot trail in Ahwahnee Meadow so it does not pass through wetlands. Restore meadow topography and native vegetation in original trail corridor.

7. Housekeeping Camp Lodging: Restore the 100-year floodplain to natural conditions. Remove all 266 lodging units and amenities including shower houses, laundry, office, and grocery store. Convert area to day-use river access point and picnic area. Retain one restroom for day users. Restore 16.8 acres of floodplain and riparian ecosystem.

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ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION



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EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

1. West of Yosemite Lodge
   - Parking: Construct 150 new parking spaces southwest of Yosemite Lodge. This includes 15 spaces for tour bus parking. Parking redevelopment will incorporate best management practices to protect water quality.

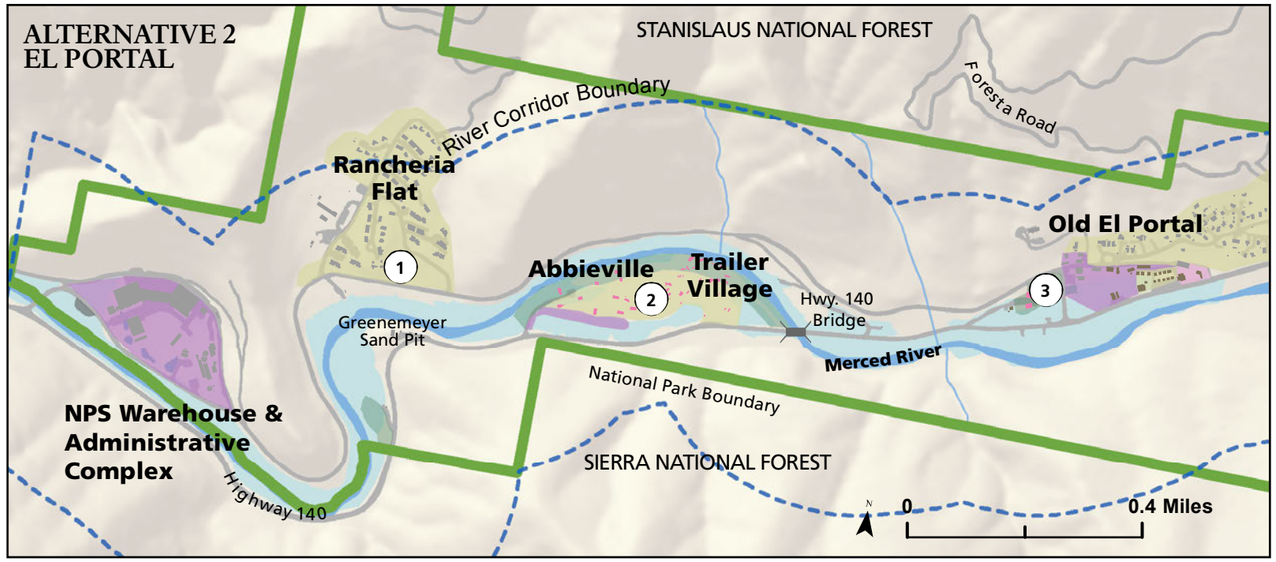
2. Yosemite Lodge Area
   - Yosemite Lodge Re-development: Remove the 245 existing lodging units at Yosemite Lodge. Re-purpose the area for day-use parking, a day lodge, food service, and camping and restore major portion of the 100-year floodplain.
   - Ecological restoration: Restore riparian and floodplain ecosystem at the site of the former Yosemite Lodge units and cabins (those that were damaged by the 1997 flood and subsequently removed). Delineate one service road to the well house and parking. Remove non-native fill, decompact soils and plant riparian plant species (10.9 acres).
   - Camping: Construct 100 new walk-in campsites and four group sites in former Yosemite Lodge site.
   - Day-Use Parking: Add 250 day-use parking spaces in the Yosemite Lodge area. Parking re-development will incorporate best management practices to protect water quality.
   - Services and Facilities: Convert to day-use and retain core visitor services. Retain the food court. Re-purpose the Mountain Room dining service and bar areas as a day lodge. Re-purpose the convenience shop and nature shop. Remove the NPS Volunteer Office, post office, swimming pool, bike rentals, and snack stand.
   - Concessioner Housing: Remove housing at Highland Court and at the Thousands Cabins (as listed under actions common to all alternatives). No new housing would be constructed in its place.

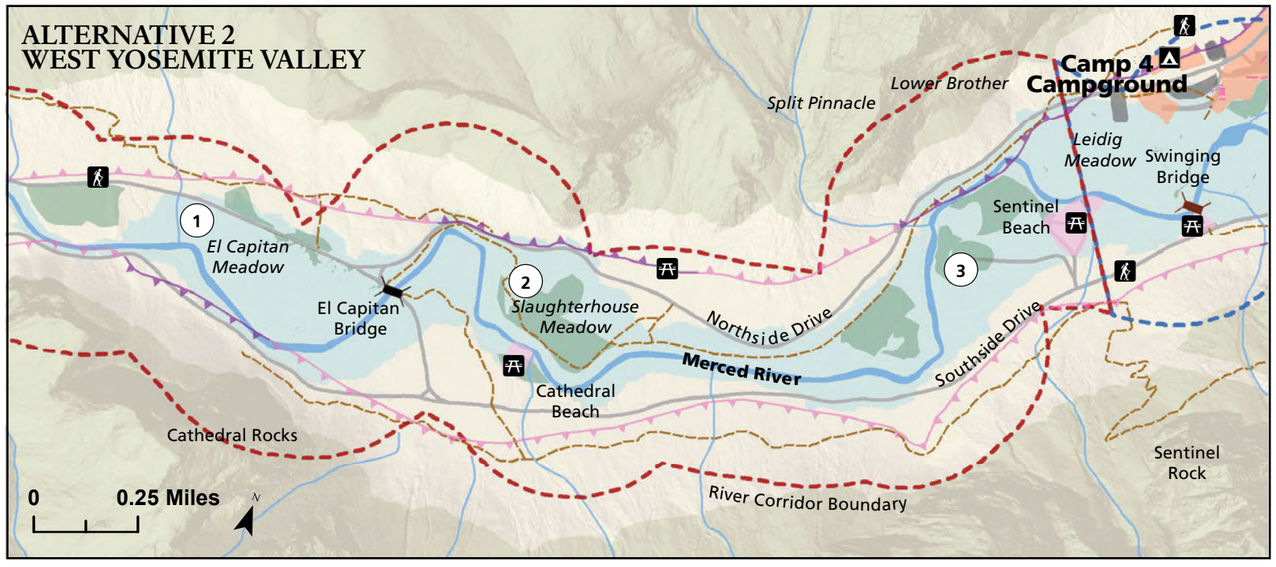
3. Yosemite Falls Intersection
   - Traffic Congestion: Move the pedestrian crossing between Yosemite Lodge and Yosemite Falls to an on-grade (street level) pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to alleviate traffic congestion created by pedestrian/vehicle conflicts.

4. Residence 1
   - Residence 1: Relocate this historic structure, also known as the Superintendent's House, to the NPS housing area and rehabilitate the building per the Secretary of Interior's Standards for the Treatment of Historic Properties and the Historic Structures Report. Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.

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ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION





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EL PORTAL

1. Rancheria Flat
   - Employee Housing: To replace temporary housing units to be removed Yosemite Valley, construct nine new units, away from sensitive resources.

2. Abbieville and Trailer Village
   - Abbieville and Trailer Village Housing: Remove or relocate 36 existing private residences in Abbieville and Trailer Village. This area would be re-developed as both concessioner housing and administrative camping. To facilitate removal of temporary employee housing in Yosemite Valley, develop high-density housing units here for 405 employees.
   - Administrative Camping: Develop an administrative campsite at the Abbieville/Trailer Village area (camping relocated from Yellow Pine administrative site in Yosemite Valley).

3. El Portal Village Center
   - Valley Oak Restoration: Restore the rare floodplain community of valley oaks in Old El Portal through implementation of best management practices. Create a valley oak recruitment area of 2.25 acres in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including the adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.
   - Odger's Fuel Storage Facility: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.

WEST YOSEMITE VALLEY

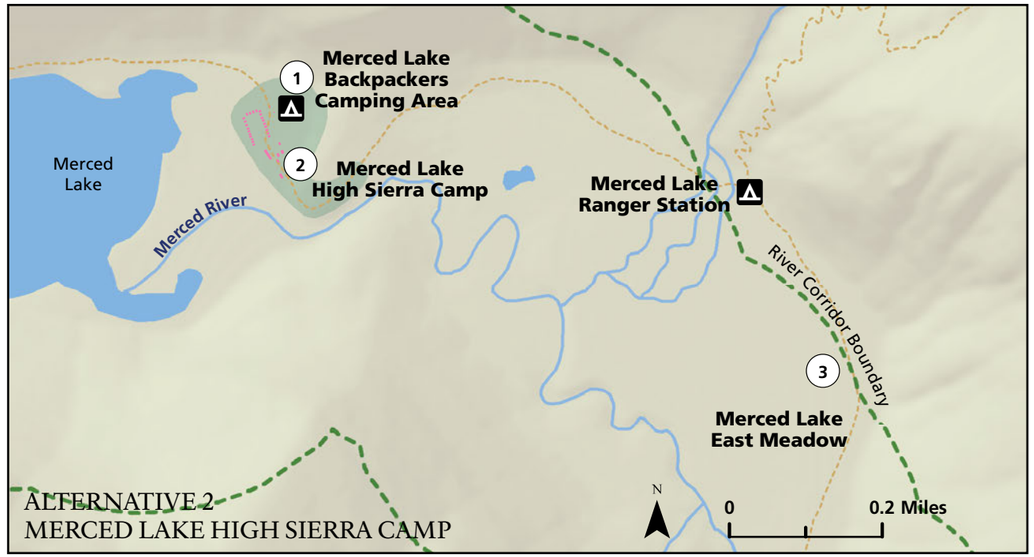
1. El Capitan Meadow Area
   - El Capitan Meadow Ecological Restoration: Remove all informal trails and areas of bare compacted soils and restore native plant communities. Disperse and reduce roadside parking along the meadow through alternative pavement striping (approximately 30 spaces removed); retain some roadside parking for search-and-rescue and other administrative traffic. Use restoration fencing and signing where necessary to further protect the meadow from trampling. No boardwalks are constructed in Alternative 2.

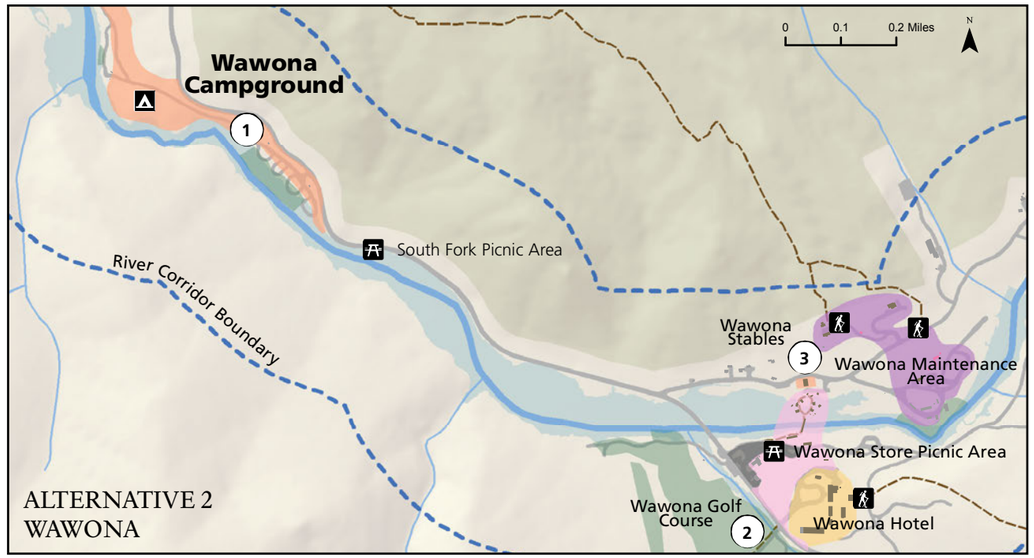
2. Valley Loop Trail
   - Trail Re-Route: Re-route trail through Slaughterhouse Meadow out of wetland habitat to an upland area. Move a 780-foot section of the trail through Bridalveil Meadow to the base of the Southside Drive road shoulder.

3. Yellow Pine Campground
   - Ecological Restoration: Remove administrative camping at Yellow Pine and restore the 100-year floodplain to natural conditions. Relocate administrative camping to Abbieville and the Trailer Village area in El Portal.

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ALTERNATIVE 2: SELF-RELIANT VISITOR EXPERIENCES AND EXTENSIVE FLOODPLAIN RESTORATION





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MERCED LAKE HIGH SIERRA CAMP

1. Merced Lake Backpackers Camping Area: Discontinue designated camping in this area but allow dispersed camping here and in the footprint of the Merced Lake High Sierra Camp. Remove waste-water system and flush toilets.

2. Merced Lake High Sierra Camp: Close and remove this lodging facility. Expand dispersed camping at the Merced Lake Backpackers Camping Area into the High Sierra Camp footprint. Remove all permanent infrastructure, including the buildings, water and septic system. Ecologically restore the area and convert the area to designated Wilderness.

3. Merced Lake East Meadow: Remove the meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.

OTHER SEGMENT 1 CAMPING AREAS (NOT SHOWN ON MAP)

- Little Yosemite Valley: Discontinue designated camping in this area, but allow dispersed camping. Remove all infrastructure associated with the designated camping area.
- Moraine Dome: Discontinue designated camping in this area, but allow dispersed camping.

WAWONA

1. Wawona Campground: Retain 64 campsites and one group site. Remove 32 sites that are located within the 100-year floodplain or culturally sensitive areas.

2. Wawona Meadow Restoration: Remove nine-hole golf course and restore to meadow conditions. Retain spray field associated with waste water treatment facility.

3. Wawona Stables: Eliminate stable operation and commercial day rides. Relocate two stock-use campground sites from a sensitive resource area to the existing stables area.

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Detailed Description of Alternative 2 by Segment

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 2 would include the following actions to protect and enhance river values:

Biological Values

- Discontinue administrative pack stock grazing at Merced Lake East Meadow. Administrative stock will carry pellet feed.

Recreational Values

- Wilderness character would be further enhanced with the removal of the Merced Lake High Sierra Camp and conversion of this area to designated Wilderness.
- Visitor use would be reduced at Little Yosemite Valley and Merced Lake by converting all designated camping areas to dispersed camping. Visitors would have the opportunity to camp out of sight and sound of other campers. Zone capacity and associated trailhead quotas would be reduced for the Little Yosemite Valley zone.

User Capacity, Land Use and Facilities Management

Alternative 2 would reduce the amount of infrastructure and the amount of use in Segment 1 to promote dispersed camping and increase opportunities for solitude. In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 2 would include the following actions to manage user capacity, land use and facilities:

Visitor Activities and Services

Overnight use in this segment would consist of visitors dispersed throughout the corridor and throughout the Wilderness.

Under Alternative 2, private boating would be allowed in Segment 1. Generally, this kind of use would consist of short floats using inflatable rafts or boats that could be carried into this remote area. Use levels would not be restricted, given the significant reduction in Wilderness zone capacities proposed under this alternative.

No commercial use would be allowed in Segment 1.

Visitor Overnight Capacity

Overnight capacities would be reduced through the trailhead quota system, as shown in Table 8-15, and services would be managed as follows:

- Remove the Merced Lake High Sierra Camp and convert the area to designated Wilderness.
- Transition the designated backpackers camping areas at Merced Lake, Little Yosemite Valley, and Moraine Dome to dispersed camping zones and remove all infrastructure.

TABLE 8-15: WILDERNESS ZONE CAPACITIES – ALTERNATIVE 2

Wilderness Zones	Alt 2 Zonewide Capacity	Alt 2 Zone Capacity** Specific to the River Corridor
Little Yosemite Valley Zone	25 people (-125 people*)	25 people (-125 people*)
Merced Lake Zone	50	50
Washburn Lake Zone	150	100
Mount Lyell Zone	50	10
Clark Range Zone	50	10

NOTES:
* Number of people reduced from Alternative 1 (No Action) to Alternative 2
** For some Wilderness zones, only a small portion of river corridor overlaps the zone. Therefore, the NPS calculated capacities that itemize the number of people in both the Wilderness zone and the river corridor portion of the zone. These calculations assume that visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Visitor Day-use Capacity

Day-use access to this segment does not vary across the alternatives and is addressed under "Actions Common to Alternatives 2-6," beginning on page 8-47.

Administrative Activities

- Reduce administrative activities as a result of the reduced zone capacities, removal of the designated camping area, and removal of infrastructure. Backcountry utilities would no longer be needed in this segment following the removal of infrastructure at Little Yosemite Valley and Merced Lake High Sierra Camp.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 2 would include the following actions to protect and enhance river values:

Geological/Hydrological Values

- Remove Stoneman Bridge and restore the riverbanks to natural conditions.
- Remove Sugar Pine and Ahwahnee bridges and associated berm/elevated trail connecting them; restore riverbanks to natural conditions; reroute multiuse trail north along the river.

Water Quality

- Remove the Concessioner Stables in Yosemite Valley and the pack trail from the stables to Happy Isles; restore to natural conditions.

Biological Values

Alternative 2 would restore major portions of the floodplain:

- Remove all existing campsites and infrastructure within the 100-year floodplain and restore natural floodplain and riparian habitat (25 acres).

  - **Backpackers Campground** – Remove all 25 sites, 21 of which are in the 100-year floodplain. (Replace 16 sites to the west of the current campground in less sensitive area out of the 100-year floodplain.)
  - **North Pines Campground** – Remove all 86 campsites and restore the 100-year floodplain to natural conditions.
  - **Lower Pines Campground** – Remove 32 campsites and restore the 100-year floodplain to natural conditions.
  - **Upper Pines Campground** – Remove 22 campsites and restore the 100-year floodplain to natural conditions. An additional two sites are removed under Alternatives 2-6 to protect cultural resources.

- **Former Lower and Upper River Campgrounds** – Remove all facilities, including the Lower River amphitheater structure, and restore 35.6 acres of natural floodplain topography and riparian/ wetland habitat within the 10-year floodplain; temporarily fence restoration areas to allow for recovery.
- **Yosemite Lodge** – Remove most buildings at Yosemite Lodge, including the four that are within the 100-year floodplain; restore the 100-year floodplain to natural conditions.
- **Former Pine and Oak Units** – Restore 10.9 acres of riparian ecosystem at the site of the VIP Office and the former Yosemite Lodge units and cabins (those that were removed after the 1997 flood) while maintaining access to the well house.
- **Ahwahnee Row and Tecoya Dorms** – Remove concessioner housing and development between the Village Store and Ahwahnee Meadow; re-contour topography (using 1919 maps as a guide), de-compact soils, and plant native meadow vegetation. Restore stream hydrologic function.
- **Yosemite Village** – Move the Yosemite Village Day-use Parking Area northward, out of the 10-year floodplain of the Merced River and outside of a designated 50-foot setback from Indian Creek; remove fill material and restore the floodplain to natural conditions.
- **Housekeeping Camp** – Remove all 266 lodging units and associated facilities at Housekeeping Camp (restrooms, shower houses, laundry, grocery store, and office) out of the 100-year floodplain. Restore the floodplain to natural conditions by de-compacting soils and planting riparian species. Direct visitor use and river access to the resilient beach locations on the western edge of Housekeeping Camp and across the footbridge; fence off the current eastern river access point located on a steep eroded bank and actively restore the riverbank with brush layering.

Alternative 2 would enhance meadow connectivity by removing segments of roads and trails that currently bisect meadows, interrupt sheetflow, and cause habitat fragmentation.

- **Bridalveil Meadow** – Reroute the 780-foot segment of the Valley Loop Trail that crosses Bridalveil Meadow closer to the base of the fill slope of the Valley Loop Road.
- **Slaughterhouse Meadow** – Reroute the Valley Loop Trail to an upland area outside of the wetlands at Slaughterhouse Meadow.
- **El Capital Meadow** – Reduce roadside parking along El Capitan Meadow (approximately 30 spaces) to reduce the amount of social trailing into the meadow. Fence if necessary to further protect the meadow from trampling.
- **Ahwahnee Meadow** – Remove 900 feet of Northside Drive and relocate the bike path to the south, restoring Ahwahnee Meadow and riparian floodplain connectivity; restore meadow contours and native vegetation. Reroute trails through Ahwahnee Meadow to avoid wetlands, consolidating use with the Housekeeping footbridge trail where possible; remove associated fill and restore trails within wetlands.

- **Stoneman Meadow** – Remove the segment of Southside Drive that bisects Stoneman Meadow (1,335 feet); realign Southside Drive through Boys Town. Extend the boardwalk through wet areas to Curry Village (up to 275 feet).

Scenic Values

- Eliminate the visual intrusion of Southside Drive through Stoneman Meadow to enhance scenic values.
- Eliminate the visual intrusion of Northside Drive through Ahwahnee Meadow to enhance scenic values.

Cultural Values

- Remove four structures representing the prominent historic patterns of development in Yosemite Valley: Sugar Pine Bridge, Ahwahnee Bridge, Stoneman Bridge, and Superintendent's House and Garage (Residence 1).
- Remove and relocate Superintendent's House and Garage (Residence 1) to the NPS housing area and, at a minimum, stabilize the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995).

Recreational Values

- Allow boating of up to 25 people per day using private vessels only. Restrict use to specific stretches of river in Yosemite Valley. This reduction in boats would enhance dispersed recreation along the river corridor.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Alternative 2 would enhance river-related recreation by making critical infrastructure improvements where necessary, while reducing activities and visitor services that are not directly related to resource-based recreation. The changes to facilities and services proposed under Alternative 2 would accomplish objectives for both ecological restoration and the type of visitor experience to be provided. Alternative 2 would include the following changes to visitor activities and services in addition to those common to Alternatives 2-6 (see page 8-47):

- Allow only private boating in this river segment. Private boats would be limited to the section of river between the Pines campgrounds and Sentinel Beach. Put-ins and take-outs would be limited to designated locations within the Pines campgrounds and established day-use sites. This use would be monitored by a river patrol ranger with use levels anticipated to be approximately 25 boats per day.
- Remove Housekeeping Camp shower houses, restrooms, laundry, and grocery store. Retain at least one restroom when reconfiguring the area for day use.
- Remove the Concessioner Stables, eliminate commercial horseback day rides that originate from Yosemite Valley, and restore the stables area to natural conditions.
- Remove Curry Village raft rental, bike rentals, and ice skating rink.
- Remove the bike rental facility at Yosemite Lodge.
- Remove the swimming pools at the Ahwahnee Hotel and the Yosemite Lodge.

Visitor Overnight Capacity: Camping

The camping inventory for this segment would be reduced to 450 sites accommodating 2,916 people per night. The loss of campsites removed from sensitive riparian areas would be offset by a new 100-site campground built to replace Yosemite Lodge. The following actions would occur at specific locations:

- **Backpackers Campground** – Remove all 25 sites, 21 of which are in the 100-year floodplain. Construct 16 new walk-in campsites west of Backpackers Campground outside of the 100-year floodplain.
- **North Pines Campground** – Remove all 86 campsites; restore the floodplain to natural conditions.
- **Upper Pines Campground** – Retain 216 campsites. Remove 22 campsites from the 100-year floodplain; restore natural floodplain conditions.
- **Lower Pines Campground** – Retain 44 campsites. Remove 32 sites that are within the 100-year floodplain.
- **Camp 4** – Retain 35 walk-in campsites and 35 parking spaces. Construct 35 additional campsites east of Camp 4; establish a new parking area (41 spaces) for the Camp 4 campground expansion in the disturbed footprint of the former service station near Camp 4.
- **Yellow Pine** – Remove campsites at Yellow Pine Administrative Campground (4 group sites for up to 120 people).
- **New Construction** – Construct a new campground with 100 walk-in campsites and 4 group sites in the area formerly occupied by Yosemite Lodge.

Visitor Overnight Capacity: Lodging

Under Alternative 2, lodging would be significantly reduced to facilitate ecological restoration, day use, and camping. The lodging inventory would total 556 units, accommodating 1,842 people per night. Common to Alternatives 2-6, the Ahwahnee Hotel would continue to provide 123 rooms. The following additional lodging would be retained, removed, or constructed under Alternative 2:

> Preliminary drawings for lodging improvements at Boys Town under Alternative 2 have been completed to assess the feasibility of this project. See "Conceptual Site Drawings" at the end of the Alternative 2 discussion for site details and design drawings.

- **Curry Village** – Retain 355 lodging units: 290 canvas tent cabins, 18 units at Stoneman House, and 47 hard-sided cabins-with-bath. Remove all existing cabins and associated structures at Boys Town. Construct 78 new lodging units suitable for year-round use at Boys Town (25 duplex buildings and seven 4-plex buildings, all with private baths); construct a new guest check-in building and pedestrian pathway; provide 78 new parking spaces along the existing roadway. Provide 420 designated overnight parking spaces at the Curry Orchard Parking Area.
- **Housekeeping Camp** – Remove all 266 lodging units and associated facilities from the 100-year floodplain. (Convert the site to a day-use river access point and picnic area, retaining one restroom for day use.)
- **Yosemite Lodge** – Remove all 245 lodging units; retain the core portion of the lodge containing the cafeteria. (Redevelop area for visitor day use and camping.)

Visitor Day-use Parking Capacity and Transit

Alternative 2 would significantly reduce peak daily visitation to Yosemite Valley. Collectively, day-use parking, regional transit, and tour bus capacities would accommodate up to 6,819 people at one time in Segment 2:

- Reduce available day-use parking and implement an East Yosemite Valley day-use parking reservation system to reduce crowding at key attraction sites, along roadways, and in parking lots and other facilities.
- Reduce available day-use parking spaces (- 537 spaces) to provide a total of 1,800 parking spaces

Visitor circulation would be improved to reduce traffic congestion and to improve the visitor experience. Major actions would include the following:

- Re-design day-use parking at Yosemite Village to provide 550 designated spaces. Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area. Consolidate parking to the north of the road and out of the 10-year floodplain. Provide walkways leading to Yosemite Village, separating vehicle and pedestrian traffic and eliminating conflicts.
- Construct a new parking lot and a comfort station west of Yosemite Lodge, providing 150 parking spaces for day visitors and 15 spaces for tour buses.

Preliminary drawings for the Yosemite Village Day-use Parking Area and the new parking lot west of Yosemite Lodge, as proposed in Alternative 2, have been completed to assess the feasibility of these projects. See "Conceptual Site Drawings" at the end of the Alternative 2 discussion for site details and design drawings.

- Move the on-grade pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to alleviate pedestrian/vehicle conflicts.
- Re-design the intersection at Sentinel Bridge, and switch Southside Drive (between Curry Village and Sentinel Drive) to a two-way road.

Due to the reductions in the day-use parking supply in this alternative (as compared to current peak demand), an East Yosemite Valley day-use parking reservation system would be required. The majority of day-use parking spaces would be reserved, with a small number being made available for more spontaneous users (to be distributed on-site along with spaces available from cancellations and no-shows). A reservation system is needed for this alternative, as demand for day-use visitation is expected to be high relative to the available capacity and continual East Valley traffic diversions are likely to be inadequate to handle the disparity (displacing East Valley crowding to other parts of the park on a regular basis). Although details of the system will require additional planning, general characteristics may include:

- **Seasonality** – The system would likely apply through the entire peak season, which can begin as early as mid-April and continue through October.
- **Daily hours** – The system would apply to day-use parking in East Valley from 10 A.M. to 5 P.M. (periods of potential day-use crowding and congestion). Day-use visitors who arrived at parking areas before 10 A.M. or after 5 P.M. would not need a pass.
- **Primary allocation mechanism** – Reservations would be made through an online system. In-person reservations may also be made at entrance stations and visitor centers.
- **Secondary allocation mechanism** – Cancelled reservations and no-shows would be filled at entrance gates or visitor centers after a certain hour of the day. Late arrivals would not be guaranteed a space in the day use lots.
- **Timing of availability** – Approximately 80% of total spaces would be made available for reservations at intervals of six months (20%), three months (20%), one month (20%), and one week (20%) before a given date. Twenty percent would remain in the secondary system for spontaneous use (along with cancellations and no shows). The online reservations system would continually track cancellations and make those passes available.

- **Compliance** – Parking passes would need to be shown when visitors arrive at entrance gates and displayed when using the day-use lots or parking for more than one hour at trailheads or roadside viewing areas. Visitors without passes could obtain passes at entrance stations (if they are available) or travel to other parts of the park, but they would not be allowed to use day or overnight use parking areas in East Valley.
- **Fees** – An administrative fee may be collected with reservations.
- **Combining Parking Fees with Park Entrance Fees** – The NPS would explore options to pay park entrance fees when making parking pass reservations. This concept would allow visitors to enter a faster lane at entrance gates (because they only have to show previous payment).
- **Overnight visitor parking passes** – Visitors with overnight reservations would receive a parking pass for their vehicles. These visitors could park in overnight visitor lots, campgrounds, or for more than one hour at trailheads and roadside viewing areas. They would not be allowed to park in East Valley day-use lots.

Regional transit service would be reconfigured to expand the number of routes and reduce the number of runs provided on some routes (consistent with anticipated demand, as shown in Table 8-16). Shuttle service would also be improved as shown in the table below.

TABLE 8-16: TRANSIT OPTIONS- ALTERNATIVE 2

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	8 runs per day (4 from Merced; 4 from Mariposa) (year round)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	1 run per day
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	1 run/day- Sonora to Valley (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	1 run per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	5 minute peak interval between buses Year round except Visitor Center direct
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	15 minute interval between buses (summer only)
El Capitan Crossover	30 minute interval between buses (summer only)
West Yosemite Valley	No service

Administrative Activities

Administrative activities would be reduced commensurate with the reduction in services:

- Remove the Yosemite Lodge maintenance and housekeeping facilities.

Employee Housing and Employee Parking

Concessioner employee housing would be reduced commensurate with the reduction in services. Compared to existing conditions, 657 fewer concessioner employees would be housed in Yosemite Valley. In this alternative, 861 parking spaces would be allocated for administrative uses (including parking spaces near residential areas). The remaining housing for 494 concessioner employees would be provided as follows:

- Provide housing for 387employees at Curry Village.

  - Retain permanent employee housing in the Curry Village residential area (223 beds).
  - Remove employee housing at the Concessioner Stables (49 beds).
  - Construct 16 dormitory-style buildings to house 164 employees.
- Provide housing for 65 employees at Yosemite Village:
  - Retain permanent housing at Indian Creek and Upper Tecoya Management Housing (28 employees).
  - Remove Ahwahnee Row homes, Y Apartments, garage housing, and Hospital Row (43 employees).
  - Remove Tecoya Dorms (232 employees).

An additional 426 concessioner employees working in Yosemite Valley would be housed in El Portal.

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 3 for Alternative 2 are included in the "Actions Common to Alternatives 2-6" (beginning on page 8-47).

User Capacity, Land Use and Facilities Management

This alternative would provide for the same kinds and amounts of use that exist today. The majority of actions for Alternative 2 in Segment 3 are discussed in the "Actions Common to Alternatives 2-6" (page 8-47). Alternative actions that are not included in that section are listed below.

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 2 would include the following actions to manage user capacity, land use and facilities:

Visitor Activities and Services

Under Alternative 2, only private boats would be allowed in this Segment 3. It is expected that kayaks would be the craft used in this segment. Boaters would be allowed on the river below Pohono Bridge (in Segment 2) through El Portal (Segment 4). Boaters would be allowed to put in and take out at any of the roadside pull-outs. This use would be managed by a permit system and restricted to five boats per day.

Transit Options

Public transit options along this segment would be expanded as described in the Yosemite Valley segment (see Segment 2 - Transit Options above).

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 4 under Alternative 2 are addressed in "Actions Common to Alternatives 2-6" (beginning on page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 2 would provide for the same kinds and amounts of use that exist today. User capacity in this segment for this alternative is primarily affected by the increase in employee housing proposed for El Portal. While all new units would be built outside of the 100-year floodplain, most of them would be within the river corridor. Increasing the amount of housing in El Portal would offset the reduction in employee housing in Yosemite Valley.

Visitor Activities and Services

Most visitor activities and services in Segment 4 are considered in "Actions Common to Alternatives 2-6" (beginning on page 8-47). Additional actions are listed below:

- Allow only private boats in Segment 4. Expected use would be mostly rafts and kayaks. Boaters would be allowed to paddle the stretch of river from below Yosemite View Lodge to beyond the Foresta Bridge (at which point boaters would enter river reaches managed by the U.S. Forest Service). Boaters would be able to use put-ins and take-outs west of the hotel, at the store/gas station and at the Red Bud launch site. This use would be regulated through a permitting system that allows for five boats per day.

Visitor Overnight Capacity

No visitor overnight accommodations are proposed on NPS lands in this alternative.

Visitor Day-use Parking Capacity

Day-use and parking capacities would remain the same as current conditions, with a total of 214 spaces accommodating up to 740 people at one time.

Administrative Activities

All administrative activities in Segment 4 are considered in "Actions Common to Alternatives 2-6" (see page 8-47).

Employee Housing Capacity

In Alternative 2, high-density employee housing would be added to the Abbieville and Trailer Village site (405 beds). Infill units would also be constructed in the El Portal Village Center (12 beds) and in Rancheria Flat (9 beds). All new units would be located outside of the 100-year floodplain. The new housing proposed for El Portal would replace 426 concessioner employee beds removed from Yosemite Valley.

Administrative use at the Yellow Pine Administrative Campground would be relocated to Abbieville and Trailer Village.

Employee and Administrative Parking Capacity

Most employee and administrative parking actions are discussed in "Actions Common to Alternatives 2-6". Additionally, nine spaces would be added with the Rancheria Flat housing expansion, 12 spaces would be added with the El Portal housing expansion, and 405 spaces would be added for residents of the Abbieville and Trailer Village site.

Transit Options

Regional transit options would maintain existing service along the Highway 140 corridor.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in Alternative 2 that are specific to this segment.

User Capacity, Land Use and Facilities Management

Alternative 2 would provide for the same kinds and amounts of use that exist today in Segment 5. The majority of actions for Alternative 2 in Segment 5 are discussed in "Actions Common to Alternatives 2-6" (beginning on page 8-47). Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boating would be allowed in this segment. Generally, use in this segment would consist of short floats using craft that could easily be carried into this remote area. Use levels would not be restricted, as minimal use is expected due to the remote location of the segment.

Transit Options

Specific transportation options for reaching the trailheads providing access to Segment 5 are listed below under Segment 7.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (see page 8-47), protection and enhancement of cultural values and water quality would be accomplished through the actions described below.

Cultural Values/Water Quality

- Stock Campground – Relocate stock campground (two sites) from a culturally sensitive area to the Wawona stables area.
- Wawona Campground – Remove 32 sites that are either within the 100-year floodplain or in areas with sensitive cultural resources.

User Capacity, Land Use and Facilities Management

Alternative 2 would enhance river-related recreation by making critical infrastructure improvements where necessary, while reducing activities and visitor services that are not directly related to resource-based recreation. The changes to facilities and services proposed under Alternative 2 would accomplish objectives for both ecological restoration and the type of visitor experience to be provided. The majority of actions for Alternative 2 in Segment 7 are discussed in "Actions Common to Alternatives 2-6" (beginning on page 8-47). Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Most visitor activities and services in Segment 7 are considered in "Actions Common to Alternatives 2-6" (beginning on page 8-47). Additional actions are listed below:

- Boating – Only private boating would be allowed. Expected use would be kayaks and other small whitewater boats. Boaters would be permitted below Swinging Bridge to beyond the park boundary, with the exception of the Wawona impoundment. Boaters would be able to use put-ins and take-outs at Swinging Bridge, the Wawona Store area, South Fork Picnic Area, and below the campground. This use would be regulated through river patrol and monitoring, as the use level is expected to be low (and therefore would not be limited).
- Golfing – Remove the Wawona Golf Course and shop to accommodate ecological restoration. A wastewater treatment spray field would remain.
- Tennis – Remove the tennis court at the Wawona Hotel.
- Wawona Commercial Stables – Discontinue commercial horseback day rides and remove the historic Wawona stables; adapt the stables area as a stock use campground.

Visitor Overnight Capacity

The total overnight capacity for Segment 7 would be 171 units accommodating 426 people.

The Wawona Campground would be reduced to 65 campsites (414 people at one time). This includes a group site (to accommodate up to 30 persons). The two campsites at the Wawona stock camp would be relocated to the vicinity of Wawona stables (accommodating 12 people per night).

Visitor Day-use Capacity

Total visitor day-use capacity for this area would be increased from 1,295 to 1,321 people at one time. This increase is due to new regional transit options that are assumed to add up to 26 people at one time to this segment.

Transit Options

Regional transportation options on Wawona Road, between Yosemite Valley and Mariposa Grove would continue at existing service levels. One run would be added between Fresno/Oakhurst and Yosemite Valley.

Segment 8: South Fork Merced below Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in Alternative 2 that are specific to this segment.

User Capacity, Land Use and Facilities Management

Alternative 2 would provide for the same kinds and amounts of use that exist today in Segment 8. The majority of actions for Alternative 2 in Segment 8 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boating would be allowed in Segment 8 and would consist of short floats using inflatable rafts, or pass-through trips by experienced kayakers. Permits would not be required as the anticipated use level is very low.

Transit Options

Transit services for access to Segment 8 are described above under Segment 7.

Conceptual Site Drawings

Boys Town

In Alternative 2, Southside Drive would be removed from Stoneman Meadow to allow restoration, and visitor traffic would be re-routed through Curry Village. All tent cabins and cabins-without-bath structures would be removed and replaced with 78 new lodging units suitable for year-round accommodation. This would consist of 25 duplex buildings and seven 4-plex buildings, all with private baths. A new 2,840-foot long pedestrian pathway and 78 new overnight guest parking spaces would be constructed along a new roadway connecting Curry Village and the campgrounds. The Campground Reservation Center would be relocated to a more accessible location, closer to East Valley campgrounds. The Curry Orchard Parking Area would be improved using best management practices to have a total of 420 parking spaces. New ground disturbance within the 8.4-acre project area would include: approximately 33,000 square feet for new buildings; 56,800 square feet of utility service trenching; 14,200 square feet for pedestrian pathways; and 23,400 square feet of new parking, for a total of 2.9 acres. Temporary construction staging would cover approximately 1.4 acres and would likely take place within the existing Curry Orchard Parking Area.

Yosemite Village Day-use Parking Area

In Alternative 2, the existing 12-acre Yosemite Village (Camp 6) day-use parking area and all associated roadway improvements would be removed from the 10-year floodplain of the river to facilitate riparian restoration goals and prevent further resource damage. Restoration actions would remove non-native fill material, re-contour the topography, and reintroduce native vegetation to restored areas. A re-designed parking area would be improved to provide 550 parking spaces. Northside Drive would be abandoned east of the intersection with Village Drive (access to the Ahwahnee Hotel) and realigned to the south edge of the parking area (where it would connect Sentinel Drive and Village Drive). By consolidating the parking area behind the Village Store, adding new and improved walkways to Yosemite Village, and realigning the roadway around the parking area, vehicle and pedestrian conflicts would be eliminated. A new bus passenger unloading area would be established east of the Village market, and five new spaces would be provided for bus parking. The Concessioner General Office, Concessioner Garage, Art Activity Center (former bank building) would be removed, while the Village Sport Shop would be repurposed as a visitor contact station.

The project area for the Yosemite Village Day-use Parking Area in Alternative 2 would encompass approximately 22 acres, most of which is currently developed, and include: 1.2 acres for existing building removal; 1,000 square feet for the new restroom; 5.4 acres of pavement removal; 1.7 acres of new roadway;

2.4 acres for new parking; 14,900 square feet of utility service trenching; and 38,000 square feet for new pedestrian pathways. Temporary construction staging would cover approximately 2 acres.

Yosemite Lodge

In Alternative 2, all lodging units would be removed while the central food service and retail structures would remain available to support day-use visitation. The sites north and east of the remaining lodge would be improved as a day-use parking area with 250 spaces. The area west of Yosemite Lodge, currently used as parking for tour buses and transit buses would be redeveloped as a walk-in campground with 104 sites, 150 parking spaces, parking for 15 buses, and a 3,000-square-foot comfort station. The VIP Office, linen storage and laundry buildings, temporary housing at Highland Court, and the historic employee Thousands Cabins would be removed.

The project area for improvements west of the Lodge would cover 11.9 acres, most of which is currently developed, and include: 55,850 square feet of existing building and pavement removal; 8,300 square feet of utility service trenching; 2.9 acres for parking; and 2,500 square feet for pedestrian pathways. Construction staging for the redesigned parking area and the campground would take place over a 2 acre area within the existing footprint. Existing vegetation would be retained to separate and screen parking bays, while bioswales would serve to filter and treat storm water run-off.

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Huff House Employee Housing
Replace temporary housing with permanent facilities,
164 beds and 164 parking spaces

1. Construct 4 two-story buildings for 32 occupants, 8 occupants per building.
2. Construct 11 two-story buildings for 132 occupants, 12 occupants per building.
3. Provide common recreational area, approximately 3,600 square feet.
4. Build plaza areas and walkways with site furnishings, accent paving, and enhanced landscaping.
5. Construct a shuttle bus stop.
6. Remove ice rink and bicycle rentals. Construct an employee parking facility with 164 spaces.
7. Retain historic residence for housing purposes.

Boys Town Guest Lodging
Replace tent cabins 78 permanent guest cabins
and 78 parking spaces

8. Construct 25 duplex buildings replicating historic cabins, or 50 units subtotal.
9. Construct 7 four-plex buildings, or 28 units subtotal.
10. Relocate the Campground Reservation Center. Provide 8 parking spaces.
11. Construct a roadway to connect Curry Village and East Valley Campgrounds, with 78 guest parking spaces.

Curry Orchard Parking Area

12. Improve parking area with 420 spaces and landscape buffers with trees and bioswales that will treat storm water run-off.

Meadow Restoration Area

13. Remove Stoneman Road and adjacent recreation trail, extend boardwalk from existing terminus (at Stoneman Road) to Curry Village Pavilion area. Improve hydrology, remove invasive species, promote weed control and plant native species. Provide pedestrian walkways.

Existing Curry Village Visitor Services

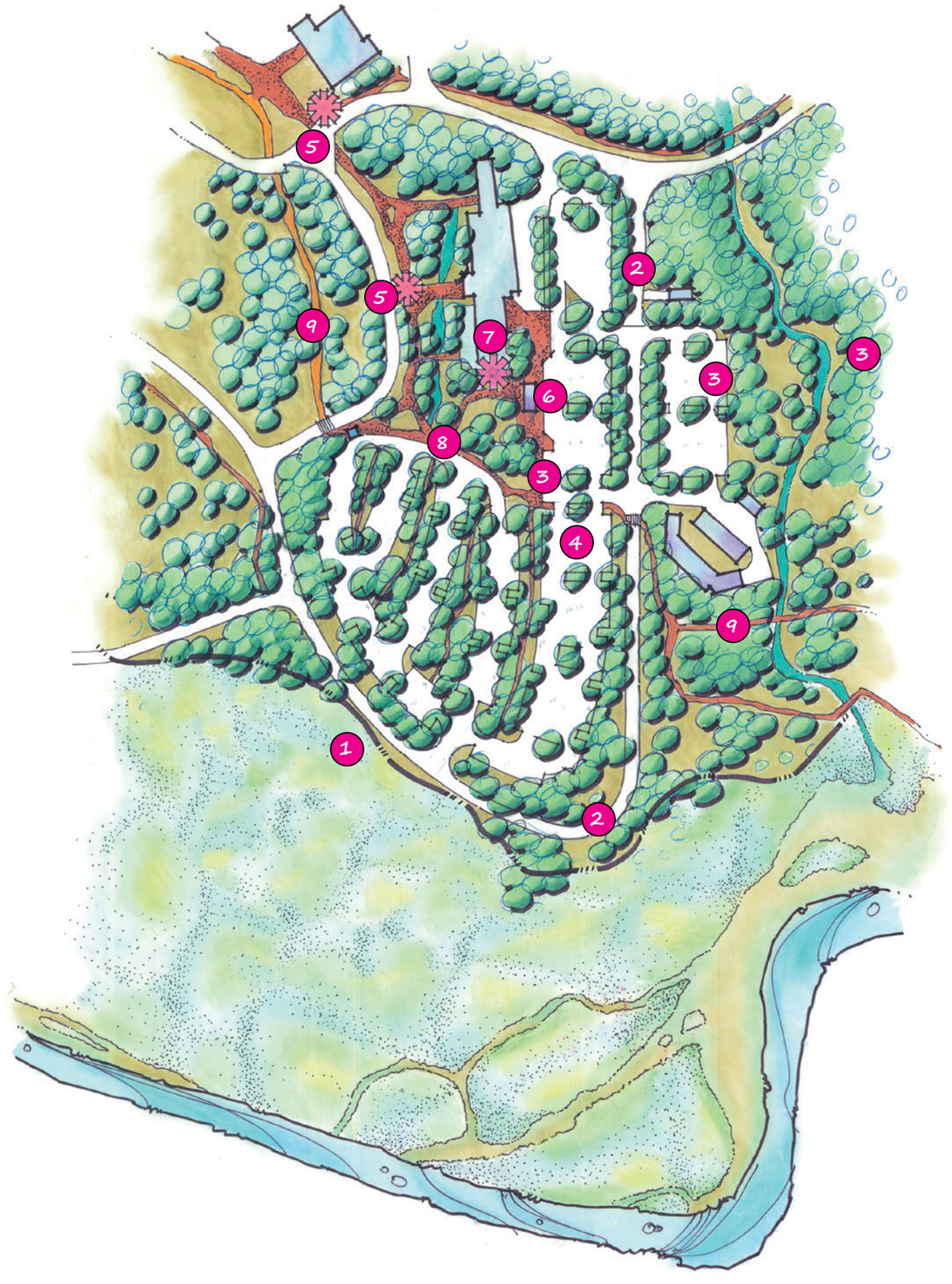
14. Retain existing historic cabins and Stoneman Cottage (65 lodging units).
15. Retain existing Curry Pavilion.
16. Retain 290 tents.

NORTH

Alternative 2
Conceptual Site Drawing for Curry Village
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Use the 10-year floodplain to establish limits of development. Restore wetlands and meadow.

2. Reroute Northside Drive to conform to the floodplain extent and south edge of day-use parking area. Northside Drive is eliminated east of this location.

3. Eliminate Concessioner General Office and Garage between the Village Store and Ahwahnee Meadow, providing more space for visitor parking. Employee dormitories and housing would be removed in Alternative 2 (as drawn), but retained in Alternative 3.

4. Provide 550 day-use parking spaces in between Northside Drive and Yosemite Village. Integrate landscaped areas to retain large numbers of trees, and include bioswales that will treat storm water run-off. Improve access through a system of pedestrian pathways leading to the Yosemite Village mall.

5. Retain existing shuttle stops on Visitor Center Loop Drive.

6. Establish bus passenger unloading area east of the Yosemite Village mall.

7. Replace Village Sport Shop with visitor contact station.

8. Eliminate art activity center and improve pedestrian access.

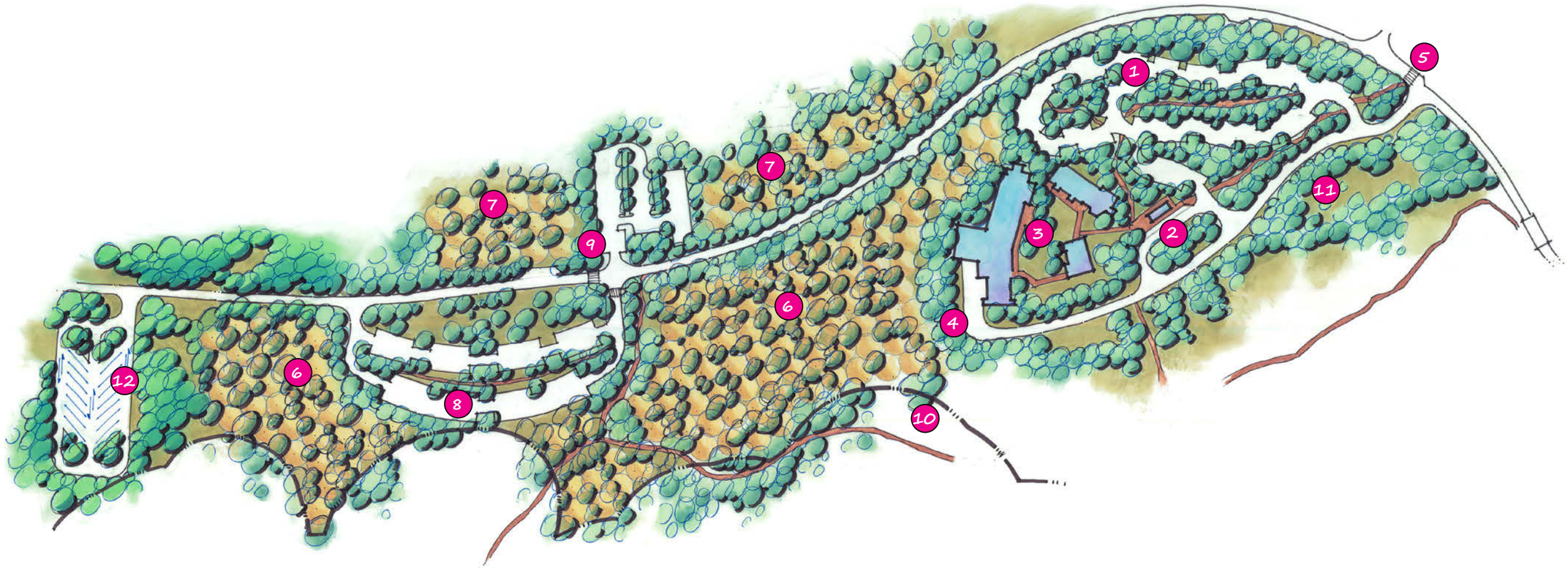
9. Improve pedestrian connections and bike paths east and west of the day-use parking area.

NORTH

Alternatives 2 and 3
Conceptual Site Drawing for Yosemite Village Day-use Parking Area
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Construct 250 day-use parking spaces. Remove all existing lodging units. Locate new parking within disturbed area. Maintain existing vegetation as buffers to separate and screen parking bays, provide pedestrian pathways and bioswales that will retain storm water run-off.

2. Construct shuttle stop with shelter.

3. Retain core visitor service buildings and courtyard. Limit visitor services to food service, interpretive displays and restroom facilities.

4. Modify food service delivery area.

5. Move pedestrian crossing to Yosemite Falls west of the existing intersection.

6. Create 104 walk-in campsites. Provide 100 standard campsites and 4 group walk-in sites. Occupancy is limited to 6 campers per site. Standard walk-in campsite is 3,850 square feet (70-foot diameter), including 1,200 square feet of clearance with a 15-foot perimeter buffer. Of the 104 sites, 4 are group walk-in sites.

7. Retain 35 existing walk-in campsites at Camp 4. Construct 35 additional walk-in sites opposite existing parking facility.

8. Construct a total of 191 parking spaces; 41 spaces for Camp 4 and 150 spaces for the walk-in camp sites. Maintain existing vegetation as buffers to separate and screen parking bays, provide pedestrian pathways and bioswales that will retain storm water run-off.

9. Construct a shuttle bus stop at Camp 4.

10. Protect and enhance a 150-foot riparian buffer.

11. Remove employee housing and restore vegetation and hydrological processes.

12. Construct 15 tour bus parking spaces.

NORTH

Alternative 2
Conceptual Site Drawing for Yosemite Lodge and Camp 4
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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ALTERNATIVE 3: DISPERSED VISITOR EXPERIENCE AND EXTENSIVE RIVERBANK RESTORATION

Overview

The guiding principles of Alternative 3 would include restoration of large portions of the floodplain and the riparian area within 150 feet of the river. This alternative would accommodate the lowest peak visitor use levels and offer fewer commercial services and facilities. Visitor use levels would be managed to allow for dispersed visitor experiences free of crowding or congestion.

Management actions in Alternative 3 would:

- Restore 308 acres of meadow and riparian habitat.
- Reduce the campsite inventory in all river segments (-3%) and increase campsite inventory in Yosemite Valley (+2%).
- Reduce the lodging inventory in all river segments (-38%) and in Yosemite Valley (-40%).
- Reduce parking for Yosemite Valley day use (-32%).
- Minimize commercial services provided by the park's primary concessioner.
- Make significant changes to the traffic circulation pattern in Yosemite Valley to accommodate ecological restoration goals and to reduce traffic congestion.
- Establish a user capacity of 12,800 people at one time for Yosemite Valley, with peak visitation estimated at 13,200 visitors per day.
- Continue to manage overnight use through the Wilderness permit system and reservation systems for lodging and camping.
- Manage user capacity for East Yosemite Valley through permits and a reservation system required during the peak summer season.

Under Alternative 3, visitors to Yosemite Valley would experience the same changes described by Alternative 2, namely in circulation, roadway realignments, ecological restoration, better defined access to parking and improved pedestrian circulation.

At Curry Village, Boys Town tent cabins would be removed to allow meadow restoration and re-routing of the road. The bicycle rental, raft rentals, and ice skating rink would be removed, while food service, groceries, pool, and the mountaineering shop would be retained. A limited number of private boaters would still be able to raft or kayak in Yosemite Valley, with additional reaches of the Merced River opened to boating. Cyclists would be able to ride bicycles in Yosemite Valley with personal equipment or equipment rented outside the park. The commercial stables near Curry Village would be removed and commercial horseback day rides discontinued. Private horseback riding would continue in Yosemite Valley and further into the high country. All lodging and associated facilities would be removed from Housekeeping Camp, and that area would be repurposed for improved beach access and day use. The Happy Isles snack stand would also be removed.

Overnight accommodations would be focused on camping, with a reduction in hotel units associated with the removal of tent cabins at Curry Village and the removal of four of the Yosemite Lodge buildings located in the floodplain. Camping would continue to be provided at Lower, Upper, and North Pines campgrounds, and Backpackers Campground would be relocated west of its current location. A new walk-in campground

would be constructed to the east of Camp 4 so that the total number of campsites in Yosemite Valley would only decrease slightly. The bike rental, pool, post office, and snack stand would be removed at Yosemite Lodge, while food service would continue to be provided. Four lodging buildings (102 units) would be removed from the floodplain. A new day-use parking area would be provided west of the Lodge in an area currently used for bus parking and storage. The pool and tennis courts would be removed at the Ahwahnee Hotel.

The West Valley would retain its overall natural character, with limited structures, and continue to serve as a destination for lower use recreational activities such as hiking, rock climbing, photography, and scenic viewing.

Those visitors hiking to Wilderness along the Merced River corridor would be able to camp with a Wilderness permit, but the formally-designated backpackers campgrounds would be converted to dispersed camping and the Merced Lake High Sierra camp permanent facilities would be removed and replaced by an outfitter's camp.

For those visitors travelling to Wawona, there will be improved transit; YARTS will add a run from Fresno to Yosemite Valley along Wawona Road. Lodging would still be available at the Wawona Hotel, although the golf course and tennis courts would be removed. The Wawona campground would be reduced in size, and commercial horseback riding rentals would no longer be available. Private boating would be allowed on the South Fork Merced.

Actions to Protect and Enhance River Values

Alternative 3 would protect and enhance river values through extensive ecological restoration that would include portions of the 100-year floodplain and riparian and meadow habitat corridorwide. Similar to Alternatives 2 and 4, it would prioritize enhancement of ecological river values over the retention of existing circulation patterns and infrastructure. Ecological restoration actions would target priority meadow and riparian habitat for enhancement, including the area currently occupied by the Wawona Golf Course and the dynamic ten-year floodplain area formerly occupied by the Upper and Lower River Campgrounds. A large valley oak habitat protection area would be created in El Portal. The alluvial processes of the river would be enhanced by removing three bridges within the bed and banks that constrict flow during high-water events. Hydrologic connectivity of meadows to the riparian floodplain would be enhanced through the removal of certain road segments that bisect meadows.

Cultural and scenic values would be protected and enhanced as described under "Actions Common to Alternatives 2-6" (beginning on page 8-47). Recreational values would additionally be protected and enhanced under Alternative 3 by reducing camps and numbers of visitors to the Wilderness above Nevada Fall, by improving access to key attraction sites, and by managing boating to improve dispersed recreation along the river in Yosemite Valley. Table 8-17 provides a summary of the proposed ecological restoration actions and the reasons for those proposed actions.

User Capacity, Land Use and Facilities Management

Alternative 3 would focus on providing a dispersed visitor experience, with marked reduction in commercial services and facilities. The overall visitor use levels would be lower than current levels, in order to allow for increased resource restoration and reduced crowding and congestion in the most popular areas of the river corridor. Table 8-18 provides a summary of user capacities by use type and location.

TABLE 8-17: ADDITIONAL ACTIONS TO PROTECT AND ENHANCE RIVER VALUES, ALTERNATIVE 3

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	308 acres: 176 acres (common to all) plus an additional 132 acres (refer to Appendix E for specific locations)
Riprap to be Removed	6,135 feet: 5,700 linear feet (common to all) plus an additional 435 feet (refer to Appendix E Restoration Map Series for specific locations)
Segment 1: Wilderness above Nevada Fall	
	▪ Remove Merced Lake High Sierra Camp and restore to natural conditions.
Segment 2: Yosemite Valley	
Free Flow / Geologic / Hydrologic Values	▪ Remove Ahwahnee, Sugar Pine, and Stoneman bridges to enhance the alluvial processes of the river.
Riparian Buffer / Floodplain	▪ Ecologically restore 35.6 acres of habitat in former Upper and Lower River campgrounds. ▪ Move Yosemite Village Day-use Parking Area north, outside the 10-year floodplain. ▪ Ecologically restore riparian habitat within 150 feet of the river at Backpackers Campground and portions of North Pines, Lower Pines, and Wawona Campgrounds. ▪ Remove all of Housekeeping Camp and portions of Yosemite Lodge from the 100-year floodplain and restore natural floodplain conditions.
Meadow Restoration	▪ Remove 900 feet of Northside Drive through Ahwahnee Meadow to enhance connectivity of the meadow and floodplain. ▪ Remove 1,335 feet of Southside Drive through Stoneman Meadow to enhance connectivity of the meadow and floodplain.
Segment 7 : Wawona	
Meadow Restoration	▪ Ecologically restore 42-acre Wawona Golf Course to meadow habitat.
Recreational Values	
Segment 1: Wilderness above Nevada Fall	
Wilderness Recreation	▪ Convert Merced Lake High Sierra Camp to temporary stock camp with reduced overnight capacity and convert area to designated Wilderness. ▪ Reduce zone capacities and convert overnight use to dispersed camping.

Visitor Activities and Services

Alternative 3 would significantly reduce commercial facilities and services. Reduced facilities and services would include the removal of some duplicative retail stores and snack stands, as well as the elimination of commercial horseback day rides in Yosemite Valley. Alternative 3 would also remove the bike rentals, raft rentals, ice skating rink, grocery store at Housekeeping Camp, and two swimming pools in Yosemite Valley.

TABLE 8-18: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 3

User Capacities by Use Type and Location		**Alt 1 (No Action)**		**Alt 3**	
	Unit Type	**Units**	**People**	**Units**	**People**
Wilderness Above Nevada Fall					
Visitor Overnight Use	Zone Capacities and Beds	380	380	260	260
Visitor Day Use	Day Hikers	350	350	350	350
Employee Housing (in camps)	Employee Beds	15	15	10	10
Administrative Day Use	Day Patrols	5	5	5	5

TABLE 8-18: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 3

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 3	
	Unit Type	Units	People	Units	People
Yosemite Valley					
Visitor Overnight Use	Rooms & Campsites	1,500	6,564	1,098	5,027
Visitor Day Use	Parking Spaces & Buses	-	11,727	-	6,289
Employee Housing	Employee Beds	1,315	1,315	1,086	1,086
Administrative Day Use	Parking Spaces	166	332	166	332
Merced Gorge					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	180	869	180	869
Employee Housing	Employee Beds	9	9	9	9
Administrative Day Use	Parking Spaces	2	4	2	4
El Portal					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	214	740	214	740
Employee Housing	Employee Beds	192	192	223	223
Administrative Day Use	Parking Spaces	610	1,220	610	1,220
South Fork Above Wawona					
Visitor Overnight Use	Permits	20	20	20	20
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1
Wawona					
Visitor Overnight Use	Rooms & Campsites	203	865	176	703
Visitor Day Use	Parking Spaces & Buses	-	1,295	-	1,321
Employee Housing	Employee Beds	220	427	205	406
Administrative Day Use	Parking Spaces	30	60	30	60
South Fork Below Wawona					
Visitor Overnight Use	Permits	-	-	-	-
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1

Visitor Overnight Capacity

Camping

The campsite inventory in the Merced Wild and Scenic River corridor, including Yosemite Valley, would be reduced by approximately 3% as a result of natural and cultural resource protection actions. All campsites within 150 feet of the river would be removed. Campsite losses would be offset with the addition of new camping adjacent to Upper Pines Campground and east of Camp 4, as well as new sites west of Backpackers Camp. Under Alternative 3, the total number of campsites in Yosemite Valley would increase to 477; the total number of campsites available in the corridor would be 549. Table 8-19 provides a summary of the proposed changes to camping and the reasons for those proposed changes.

TABLE 8-19: CAMPING FACILITIES – ALTERNATIVE 3

Existing Locations	Alt 1 (No Action)	Alt 3	Details
Backpackers	25 sites	0 sites	25 walk-in sites removed, of which 21 are within 150 feet of the river; 16 of these sites would be relocated west of Backpackers
Camp 4	35 sites	35 sites	No change to this National Historic Register Site
Lower Pines	76 sites	61 sites	15 sites within 150 feet of the river removed
North Pines	86 sites	52 sites	34 sites within 150 feet of the river removed
Upper Pines	240 sites	238 sites	2 sites removed for archeological resource concerns
Yellow Pine Administrative	4 sites	4 sites	No changes to these group administrative sites
Wawona Campground	99 sites	72 sites	27 sites within 150 feet of the river or in culturally sensitive areas removed
Total Existing Locations	**565 sites**	**462 sites**	
New Locations	**Alt 1**	**Alt 3**	**Details**
West of Backpackers	0 sites	16 sites	16 walk-in sites relocated from Backpackers Campground to less sensitive area outside 100-year floodplain
East of Camp 4	0 sites	35 sites	35 walk-in sites constructed in area east of Camp 4
Upper Pines	0 sites	36 sites	36-site RV loop constructed
Total New Camping	**0 sites**	**87 sites**	
Total Camping in Corridor	565 sites	549 sites	

Lodging

In-park lodging availability would be reduced by approximately 38% compared to Alternative 1 (No Action). Management actions related to lodging would focus on removing lodging units from the 100-year floodplain at Yosemite Lodge, and Housekeeping Camp, and in Wilderness. All permanent infrastructure at the Merced Lake High Sierra Camp would be removed. A pack camp with a maximum capacity of 15 people would replace the High Sierra Camp, accommodating limited overnight lodging in this location while still allowing the area to be converted to designated Wilderness. No new permanent lodging would be constructed in Alternative 3. As a result of these actions, the in-park lodging inventory would be reduced from 1,160 units to 725 units. Table 8-20 provides a summary of the proposed changes to lodging and the reasons for those proposed changes.

Parking Inventory and Access Improvements

Day-use parking capacity in Yosemite Valley would be reduced by 32% compared to current levels. For day use, restrictions would be set due to proposed reductions in day-use parking in Yosemite Valley. Day-use capacity would be actively managed and potentially restricted during peak use season (May through September). A day-use permit system would be implemented in this alternative during the peak summer season. . The most significant changes to parking and circulation would take place in the vicinity of the day-use parking area near Yosemite Village and Yosemite Lodge. Day-use visitors would park at a redesigned parking area at Yosemite Village Day-use Parking Area, with a total of 550 parking spaces. Another day-use parking area with 150 parking spaces would be added to the west of Yosemite Lodge, along with day-use tour and transit bus parking. Total parking for East Yosemite Valley (including day, overnight and administrative uses) would be approximately 4,300 spaces.

Transit services would remain unchanged on the Highway 140 (El Portal Road) and Highway 120 East (Tioga Road) corridors; service would be reduced to one round-trip per day on the Highway 120 West (Big Oak Flat) corridor. One round-trip run per day would be added to the Highway 41 (Wawona Road) corridor. All within-park shuttle services would remain the same, and the East Valley shuttle would decrease shuttle intervals to five minutes. Table 8-20 provides a summary of the total number of parking spaces for each relevant segment of the corridor.

TABLE 8-20: LODGING FACILITIES – ALTERNATIVE 3

Wilderness	Alt 1 (No Action)	Alt 3	Details
Merced Lake High Sierra Camp	22 units (60 beds)	0 units (15 people)	All permanent infrastructure removed. Wilderness lodging facility converted to 15-person temporary pack camp.
Yosemite Valley	**Alt 1**	**Alt 3**	**Details**
Ahwahnee Hotel	123 rooms	123 rooms	No change at this National Historic Landmark
Housekeeping Camp	266 units	0 units	Remove all 266 units from 100-year floodplain
Curry Village	400 units	355 units (290 canvas tent cabins and 65 hard-sided units)	▪ Retain 290 canvas tent cabins ▪ Retain 18 units at Stoneman House ▪ Retain 47 cabin-with-bath units ▪ At Boys Town, Southside Drive is re-routed and the area restored.
Yosemite Lodge	245 rooms	143 rooms	Remove 102 rooms (four buildings) from 100-year floodplain
Wawona	**Alt 1**	**Alt 3**	**Details**
Wawona Hotel	104 rooms	104 rooms	No change at this National Historic Landmark
Total Lodging in Corridor	1,160 units	725 units	

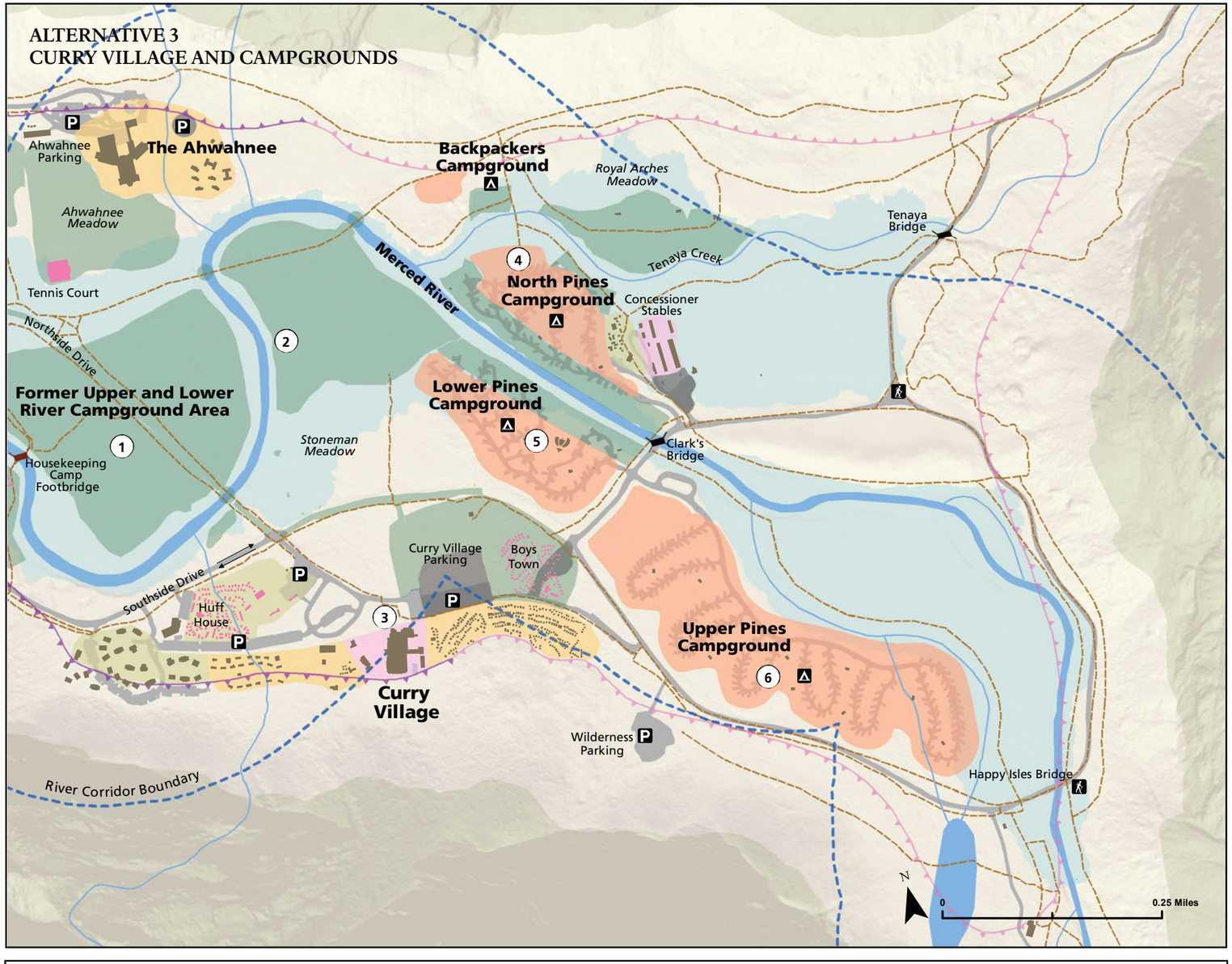
The most significant changes to parking and circulation would take place in the vicinity of the day-use parking area near Yosemite Village and Yosemite Lodge. Day-use visitors would park at a redesigned parking area at Yosemite Village Day-use Parking Area, with a total of 550 parking spaces. Another day-use parking area with 150 parking spaces would be added to the west of Yosemite Lodge, along with day-use tour and transit bus parking. Total parking for East Yosemite Valley (including day, overnight and administrative uses) would be approximately 4,300 spaces.

Transit services would remain unchanged on the Highway 140 (El Portal Road) and Highway 120 East (Tioga Road) corridors; service would be reduced to one round-trip per day on the Highway 120 West (Big Oak Flat) corridor. One round-trip run per day would be added to the Highway 41 (Wawona Road) corridor. All within-park shuttle services would remain the same, and the East Valley shuttle would decrease shuttle intervals to five minutes.

TABLE 8-21: NUMBER OF DAY-USE PARKING SPACES IN SEGMENTS – ALTERNATIVE 3

Location	Alt 1 (No Action)	Alt 3
Segment 2: Yosemite Valley	2,337 spaces	1,597spaces
Segment 3: The Gorge	180 spaces	180 spaces
Segment 4: El Portal	214 spaces	214 spaces
Segment 7: Wawona	290 spaces	290 spaces
Total Day-use Parking	3,021 spaces	2,281 spaces

ALTERNATIVE 3: DISPERSED VISITOR EXPERIENCES AND EXTENSIVE RIVERBANK RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
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- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

1. Former Upper and Lower River Campground Area
   - Ecological Restoration: Restore 35.6 acres of floodplain habitat within the 10-year floodplain. Restore natural floodplain topography by removing remaining asphalt and re-establishing seasonal channels, and revegetate with native plants. Remove Lower River amphitheater. Temporarily fence restoration areas to allow for recovery.

2. River Reach between Bridges
   - Ahwahnee and Sugar Pine Bridges: Remove the Ahwahnee and Sugar Pine bridges, and associated berm to enhance the free-flowing condition of the river. Restore area to natural conditions. Re-route the multiple-use trail north of the river.
   - Stoneman Bridge: Remove Stoneman Bridge to enhance free-flowing conditions of the river. Restore area to natural conditions. Reconfigure Southside Drive as a two-way road, remove the road segment through Stoneman Meadow, and re-design the intersection at Sentinel and Southside Drive.

3. Curry Village Area
   - Ecological Restoration: Remove Southside Drive through Stoneman Meadow to enhance the hydrologic connectivity of the meadow. Re-align road through the Boys Town area instead of the meadow, and restore remaining area to natural conditions. Extend meadow boardwalk (up to 275 feet) to Curry Village.
   - Curry Orchard Parking Area: Provide 300 parking spaces. Ecologically restore part of the existing parking area to accommodate Stoneman Meadow restoration. Re-design parking area using best management practices to increase drainage to Stoneman Meadow and protect water quality. Remove apple trees to mitigate human-bear interactions and plant native vegetation.
   - Lodging: Total would be 355 guest units, including: 290 tents in Curry Village retained; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained. At Boys Town, Southside Drive would be re-routed to facilitate the restoration of Stoneman Meadow and the remaining area at Boys Town ecologically would be restored.
   - Huff House Housing: Remove temporary housing at Huff House. Construct 16 buildings, housing 164 employees, using the same dormitory prototype.
   - Curry Village Day-use Parking: Within the existing disturbance footprint at the Curry Village Ice Rink area, provide visitor day-use and employee commuter parking for 105 vehicles.

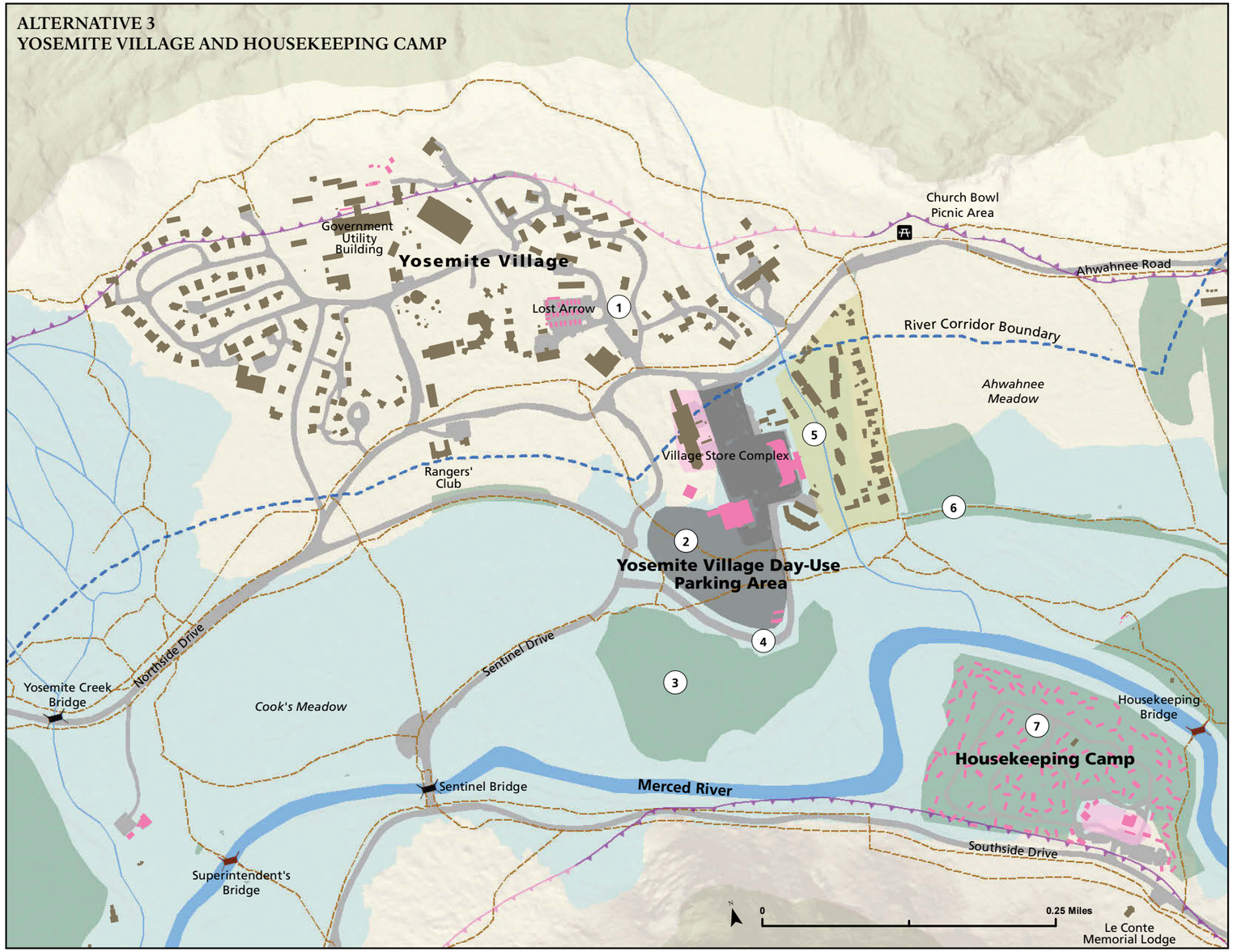
4. North Pines Campground Area
   - Ecological Restoration at Campgrounds: Remove campsites within 150 feet of the river at North Pines, Backpackers, and Lower Pines campgrounds. Restore to 12 acres of riparian habitat. Designate a formal river access point at North Pines campground.
   - North Pines Campground: Retain 52 campsites. Remove 34 sites that are within 150 feet of river.
   - Backpackers Campground: Remove all 25 walk-in sites in the campground, of which 21 are within the 150-foot riparian buffer. Partially replace sites removed with a new campground with 16 walk-in sites west of Backpackers Campground.
   - Concessioner Stables in Yosemite Valley: Reduce the footprint of the stables to provide staging for temporary pack camp operation at Merced Lake High Sierra Camp and overflow parking for campgrounds. Retain associated housing (49 beds).

5. Lower Pines Campground Area
   - Campground Sites: Retain 61 campsites and remove 15 sites from within 150 feet of river.

6. Upper Pines Campground Area
   - Campground Sites: Retain 238 campsites. Remove two sites for sensitive resource concerns.
   - New RV Loop: Construct a new campground loop with 36 RV sites.

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ALTERNATIVE 3: DISPERSED VISITOR EXPERIENCES AND EXTENSIVE RIVERBANK RESTORATION



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EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Lost Arrow: Remove temporary employee housing. Re-establish an administrative parking lot to accommodate 50 spaces.

2. Yosemite Village Day-use Parking Area: Move the parking area outside of the dynamic 10-year floodplain. Formalize this parking area to using best management practices to accommodate 550 parking places and protect water quality.

3. Ecological Restoration at Yosemite Village Day-use Parking Area: Remove nonnative fill material and restore meadow and floodplain habitat within the dynamic 10-year floodplain.

4. Pedestrian/Vehicle Conflicts: Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area. Consolidate parking to the north of the road and provide walkways leading to Yosemite Village separating vehicle and pedestrian traffic and eliminating conflicts. This re-designed traffic circulation patterns would not require roundabouts or a pedestrian undercrossing.

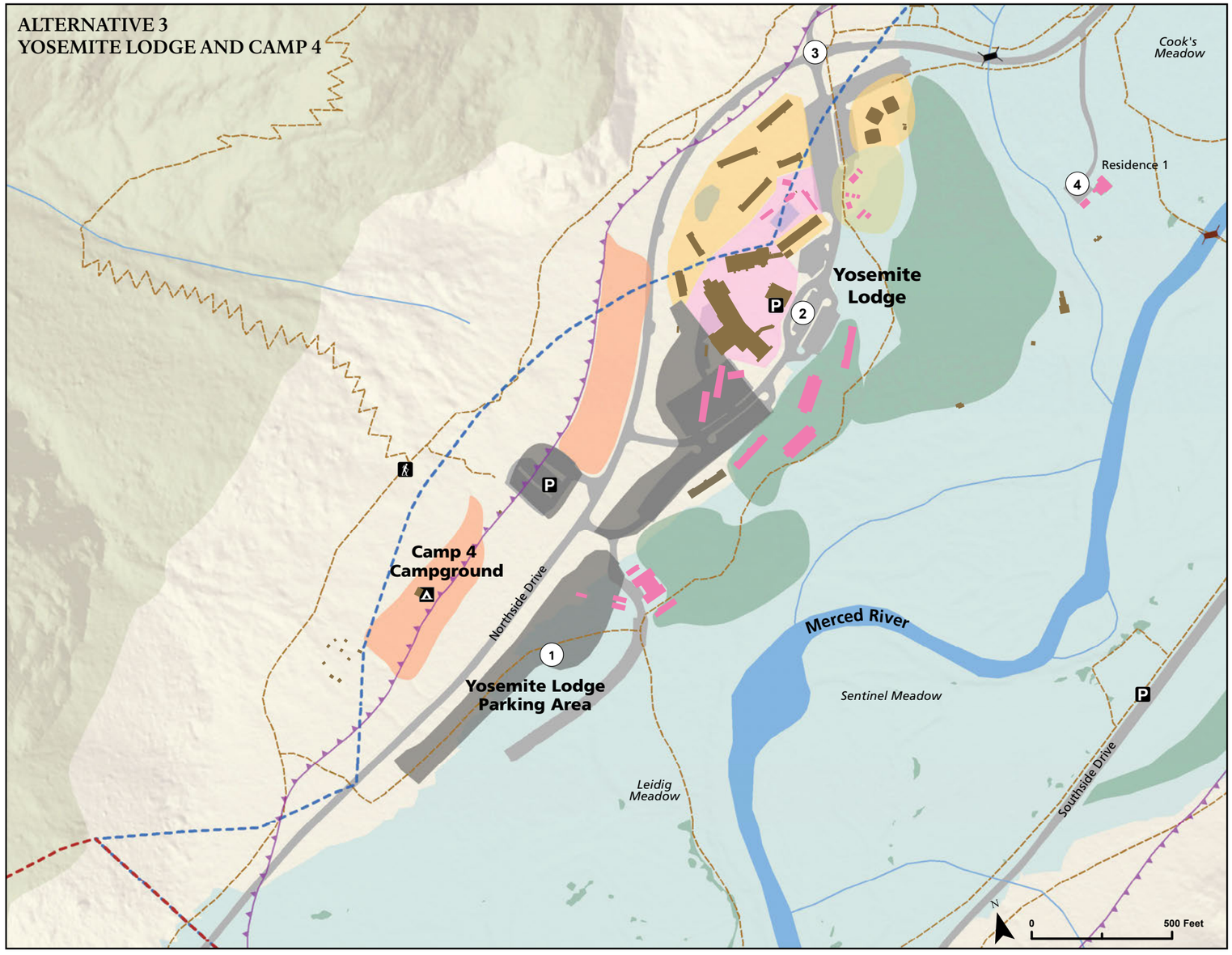
5. Concessioner Employee Housing: Create a 50-foot setback from Indian Creek. Ecologically restore the riparian habitat and protect using restoration fencing. Retain Ahwahnee Row and Tecoya employee housing.

6. Ahwahnee Meadow Restoration: Remove 900 feet of road through Ahwahnee Meadow and relocate the bike path to the south, restoring hydrologic connectivity between the meadow and river. Re-route the formal foot trail in Ahwahnee Meadow so it does not pass through wetlands. Restore meadow topography and native vegetation in original trail corridor.

7. Housekeeping Camp Lodging: Remove all lodging units and amenities including shower houses, laundry, office, and grocery store. Convert Housekeeping Camp to a day-use river access point and picnic area. Retain one restroom for day users. Restore 16.8 acres of floodplain and riparian ecosystem.

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EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

1. West of Yosemite Lodge
   - Parking: Construct additional 150 day-use parking spaces southwest of Yosemite Lodge. This includes 15 spaces for tour bus parking. Parking redevelopment will incorporate best management practices to protect water quality.

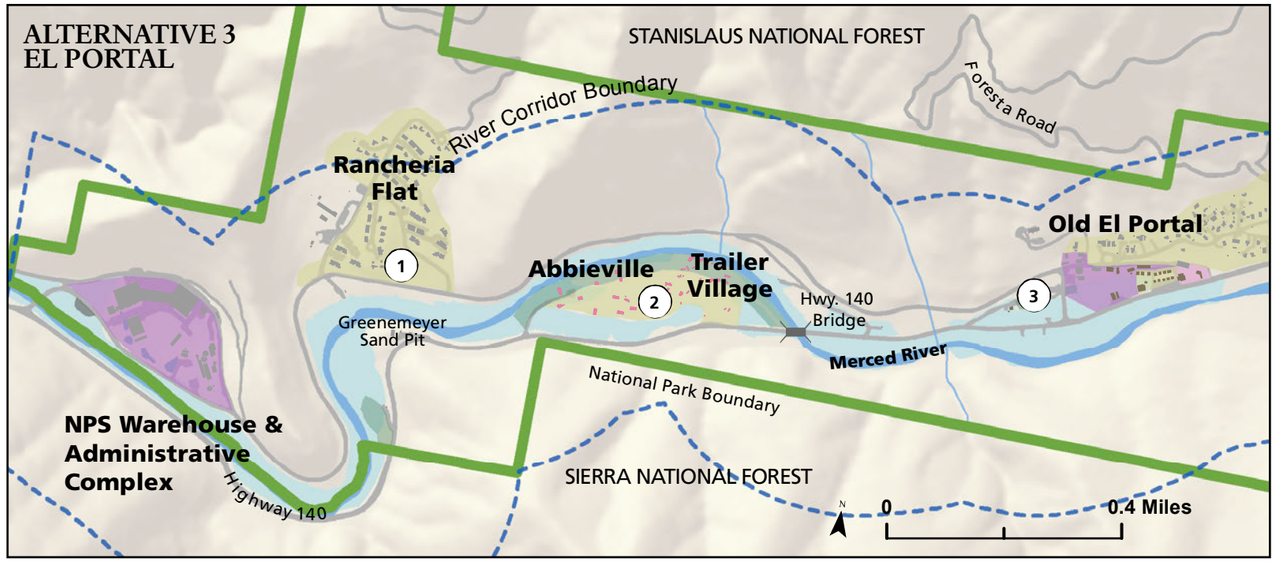
2. Yosemite Lodge Area
   - Ecological restoration: Remove four Yosemite Lodge lodging buildings (in addition to other structures listed in actions common to all alternatives) from the 100-year floodplain and restore to natural conditions (3.3 acres). Also, restore riparian and floodplain ecosystem at the site of the former Yosemite Lodge units and cabins (those that were damaged by the 1997 flood and subsequently removed). Delineate one service road to the well house and parking. Remove non-native fill, decompact soils and plant riparian plant species (10.9 acres).
   - Lodging: Retain 143 units at Yosemite Lodge with associated parking.
   - Services and Facilities: Retain the Yosemite Lodge Food Court and Mountain Room Dining Room and Bar. Remove the post office, swimming pool, bike rentals, snack stand, and NPS Volunteer Office. Relocate the concessioner housekeeping and maintenance buildings.
   - Tour buses: Remove temporary housing complex at Highland Court and establish a tour bus drop-off area with three bus loading spaces.
   - Concessioner Housing: Construct two new concessioner housing areas for 104 employees and construct 78 employee parking spaces. (Common to all alternatives is to remove housing at Highland Court and at the Thousands Cabins.)

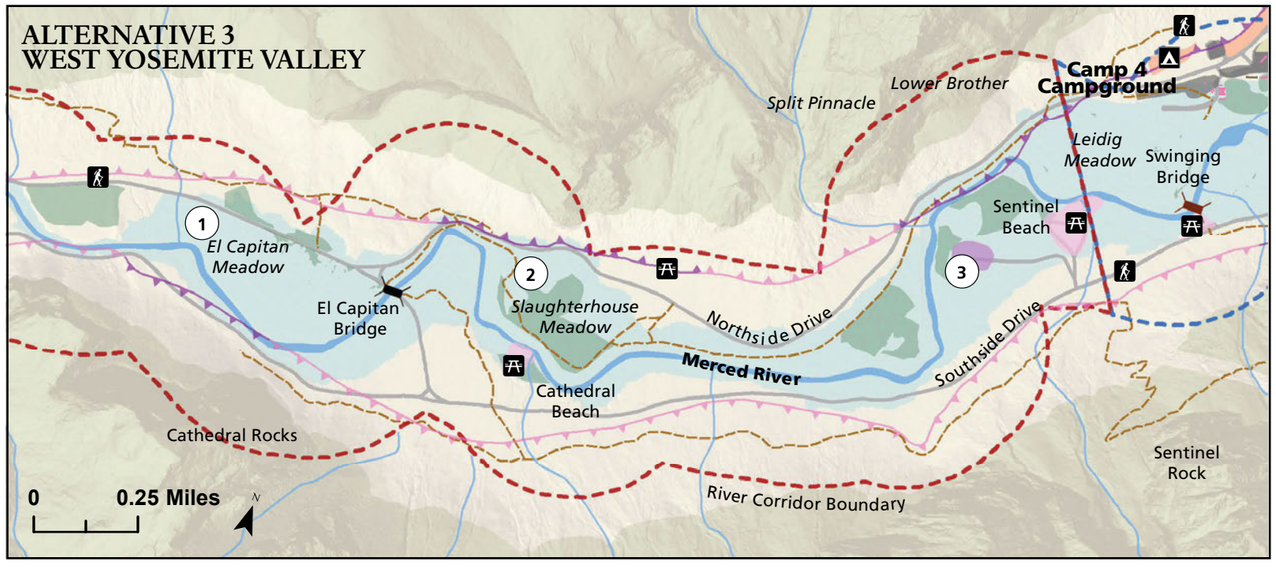
3. Yosemite Falls Intersection
   - Traffic Congestion: Move the pedestrian crossing between Yosemite Lodge and Yosemite Falls to an on-grade (street level) pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to help alleviate pedestrian/vehicle conflicts and associated traffic congestion.

4. Residence 1
   - Residence 1: Relocate this historic structure, also called the Superintendent's House, to the NPS housing area and rehabilitate the building per the Secretary of Interior's Standards for the Treatment of Historic Properties and the Historic Structures Report. Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.

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ALTERNATIVE 3: DISPERSED VISITOR EXPERIENCES AND EXTENSIVE RIVERBANK RESTORATION





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- Scenic Segment

EL PORTAL

1. Rancheria Flat
   - Employee Housing: To replace temporary housing units that will be removed from Yosemite Valley, construct one dormitory for 12 employees plus units for seven additional employees, for a total of 19 employee beds, away from sensitive resources.

2. Abbieville and Trailer Village Area
   - Abbieville and Trailer Village Housing: Remove or relocate 36 existing private residences. Continue to provide for housing land use for 40 employees and volunteers at this location. As homes within the 150-foot riparian buffer become vacant, ecologically restore these areas.

3. El Portal Village Center
   - Valley Oak Restoration: Restore the rare floodplain community of valley oaks in Old El Portal through implementation of best management practices. Create a valley oak recruitment area of 2.25 acres in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including the adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.
   - Odger's Fuel Storage Facility: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.

WEST YOSEMITE VALLEY

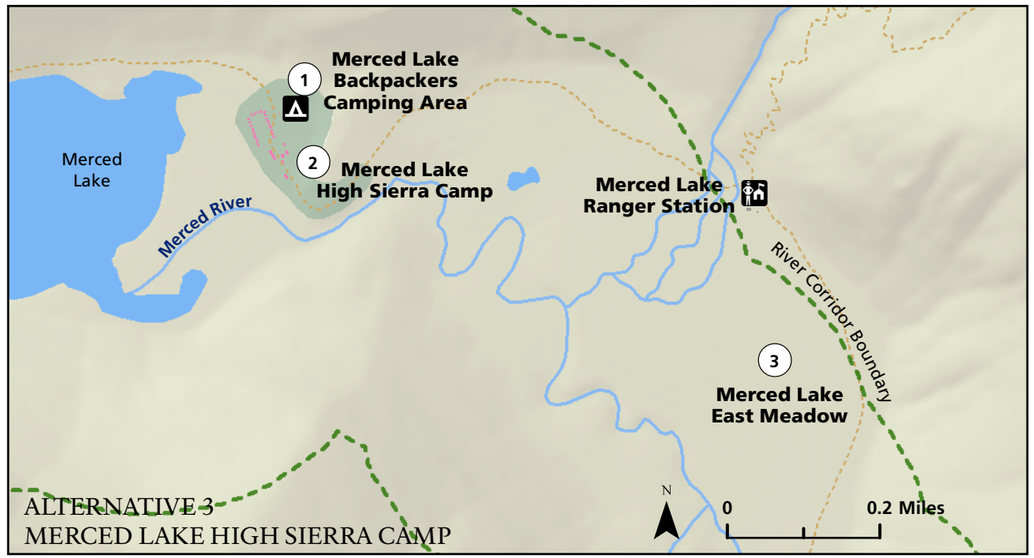
1. El Capitan Meadow Area
   - El Capitan Meadow Ecological Restoration: Remove all informal trails from the meadow that incise, promote habitat fragmentation, or are located in sensitive and frequently inundated areas, and restore to natural conditions. Use restoration fencing and signing to designate appropriate meadow access points. No boardwalks are constructed in this alternative.

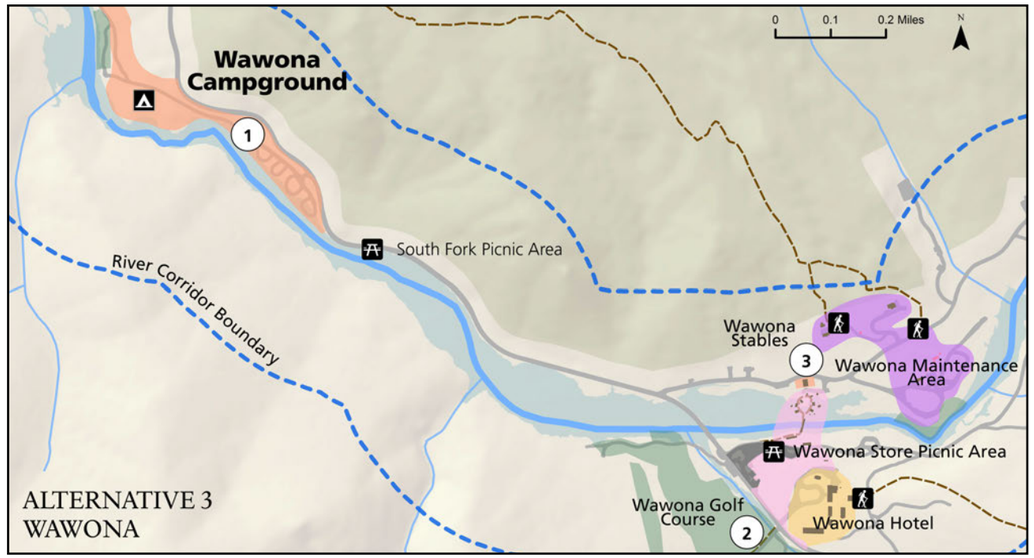
2. Valley Loop Trail
   - Trail Re-Route: Reroute trail through Slaughterhouse Meadow out of wetland habitat to an upland area. Move a 780-foot section of the trail through Bridalveil Meadow to the base of the Valley Loop Road shoulder.

3. Yellow Pine Campground
   - Administrative-Use Campground: Retain Yellow Pine Campground's four group sites (serving up to 120 people) for administrative use.

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ALTERNATIVE 3: DISPERSED VISITOR EXPERIENCES AND EXTENSIVE RIVERBANK RESTORATION





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MERCED LAKE HIGH SIERRA CAMP

(1) Merced Lake Backpackers Camping Area: Discontinue designated camping in this camping area, but allow dispersed camping both here and in the former Merced Lake High Sierra Camp area. Remove waste water system. Replace flush toilets with composting toilets.

(2) Merced Lake High Sierra Camp: Convert Merced Lake High Sierra Camp to a temporary pack camp with a maximum group size of 15 people. Remove permanent infrastructure, including buildings, water system and septic system. Ecologically restore the area and convert area to designated Wilderness. Establish a maximum limit of 2.5 pack strings-per-week for re-supply of the temporary outfitter camp for each season.

(3) Merced Lake East Meadow: Establish a preliminary grazing capacity for the Merced Lake East Meadow of a maximum of 58 pack stock nights annually depending on meadow condition. Exclude packstock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adapted to ensure the meadow condition meets the Management Standard for Bare Soil Indicator.

OTHER SEGMENT 1 CAMPING AREAS (NOT SHOWN ON MAP)

- Little Yosemite Valley: Discontinue designated camping but allow dispersed camping in this area. Remove all infrastructure, except for the composting toilets.
- Moraine Dome: Discontinue designated camping but allow dispersed camping in this area.

WAWONA

(1) Wawona Campground: Retain 64 campsites and one group site. Remove 32 sites that are located within the 100-year floodplain or culturally sensitive areas.

(2) Wawona Meadow Restoration: Remove golf course and restore to meadow conditions. Retain spray field associated with waste water treatment facility.

(3) Wawona Stables: Eliminate stable operation and commercial day rides. Relocate two stock-use campground sites from a sensitive resource area to the existing stables area.

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Detailed Description of Alternative 3 by Segment

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 3 would include the following actions to protect and enhance river values:

Biological Values

- Establish a preliminary grazing capacity for the Merced Lake East Meadow: a maximum of 58 pack stock nights annually depending on meadow condition. Exclude pack stock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adapted to ensure the meadow condition meets the management standard for the bare soil indicator.

Recreational Values

- Enhance Wilderness character by replacing the Merced Lake High Sierra Camp with a temporary stock camp, and converting this area to Wilderness.
- Reduce crowding by converting all designated camping areas to dispersed camping.
- Reduce trailhead quotas for trailheads that lead to Little Yosemite Valley.
- Establish a maximum limit of 2.5 pack strings per week for re-supply of the temporary outfitter camp.

User Capacity, Land Use and Facilities Management

Alternative 3 would reduce the amount of infrastructure in the river corridor in Segment 1, reduce the capacity of the Little Yosemite Valley Wilderness zone, re-purpose the Merced Lake High Sierra Camp as a temporary outfitter camp, and maintain the existing Wilderness zone quotas for all other zones in the river corridor. In addition to the "Actions Common to Alternatives 2-6", Alternative 3 would include the following actions to manage user capacity, land use and facilities:

Visitor Activities and Services

Primary activities in Segment 1 would continue to include hiking and overnight backpacking. Backpackers would stay overnight at dispersed areas throughout the Wilderness, rather than at designated camping areas.

Private boating would be allowed in Segment 1 under Alternative 3. Generally, this kind of use would consist of short floats using craft that can easily be carried into this remote area. Put-ins and take-outs would be dispersed and the use level would be unrestricted (due to the expected low use levels associated with this remote area of the river).

Under Alternative 3, the findings of the Determination of Extent Necessary (DEN) (Appendix L) would be implemented. Following is a summary of the commercial use permitted:

- Allowance of one overnight commercial group per Wilderness zone.

- No camping or travel allowed more than one-quarter mile from a maintained trail or public access road.
- All commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of three persons (including employees), only two pack animals are allowed in addition to three riding stock.
- Additional seasonal and weekend restrictions would apply in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones as indicated in Appendix L.

Visitor Overnight Capacity

The Wilderness trailhead quota system would be maintained, with the changes proposed in Table 8-22. Services would be managed as follows under Alternative 3:

- Convert the Merced Lake High Sierra Camp to a pack camp with a maximum of 15 people allowed; remove permanent infrastructure, including the water treatment system, and convert area to designated Wilderness.
- Convert the Merced Lake Backpackers Camping Area to dispersed camping; replace the flush toilet with a composting toilet.
- Convert the Little Yosemite Valley designated backpackers camping area to dispersed camping; retain the composting toilet. Reduce the capacity of the Little Yosemite Valley Wilderness zone.
- Eliminate the designated backpackers camping area at Moraine Dome.

TABLE 8-22: WILDERNESS ZONE CAPACITIES – ALTERNATIVE 3

Wilderness Zones	Alt 3 Zonewide Capacity	Alt 3 Zone Capacity** Specific to the River Corridor
Little Yosemite Valley Zone	75 people (-75 people*)	75 people (-75 people*)
Merced Lake Zone	50	50
Washburn Lake Zone	150	100
Mount Lyell Zone	50	10
Clark Range Zone	50	10

NOTES:
* Number of people reduced from Alternative 1 (No Action) to Alternative 3
** For some Wilderness zones, only a small portion of river corridor overlaps the zone. Therefore, the NPS calculated capacities that itemize the number of people in both the Wilderness zone and the river corridor portion of the zone. These calculations assume that visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Visitor Day-use Capacity

Day-use access to this segment is addressed under the "Actions Common to Alternatives 2-6."

Administrative Activities

- Continue current administrative activities, which consist primarily of regular ranger patrols, backcountry utility work, and occasional trail/restoration work. These activities are seasonal and minimal in comparison to visitor use and would not affect overall user capacity.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 3 would include the following actions to protect and enhance river values:

Geological/Hydrological Values

- Remove Stoneman Bridge and restore the riverbank to natural conditions.
- Remove Sugar Pine and Ahwahnee bridges and associated berm/elevated trail connecting them; restore banks to natural conditions; re-route multi-use trail north along the river.

Biological Values

Alternative 3 would remove all campsites within 150 feet of the high-water mark:

- Remove all existing campsites and infrastructure within 150 feet of the ordinary high-water mark and restore natural floodplain and riparian habitat (12 acres).
    - **Backpackers Campground** – Remove all 25 sites, 21 of which are within 150 feet of the ordinary high-water mark. (Replace 16 sites to the west of the current campground, in less sensitive area outside the 100-year floodplain.)
    - **North Pines Campground** – Remove 34 sites from within 150 feet of the ordinary high-water mark; restore native riparian vegetation.
    - **Lower Pines Campground** – Remove 15 sites from within 150 feet of the ordinary high-water mark; restore native riparian vegetation.
    - **Upper Pines Campground** – Retain 238 campsites, removing 2 sites for archeological resource concerns.
- **Former Lower and Upper River Campgrounds** – Remove all facilities, including the Lower River amphitheater structure, and restore 35.6 acres of natural floodplain topography and riparian/wetland habitat within the 10-year floodplain; temporarily fence restoration areas to allow for recovery.
- **Yosemite Lodge** – Remove four buildings at Yosemite Lodge containing 102 lodging units that are currently within the 100-year floodplain; restore the floodplain to natural conditions.
- **Former Pine and Oak Units** – Restore 10.9 acres of riparian ecosystem at the site of the wellness center and former Yosemite Lodge units and cabins (removed after the 1997 flood) while maintaining access to the pump house and Yosemite Creek lift station.
- **Yosemite Village** – Move the Yosemite Village Day-use Parking Area northward, out of the 10-year floodplain of the Merced River and outside a designated 50-foot setback from Indian Creek; remove fill material and restore the floodplain to natural conditions.
- **Housekeeping Camp** – Remove all 266 lodging units and associated facilities at Housekeeping Camp (restrooms, shower houses, laundry, grocery store, and office) from the 100-year floodplain; convert area to a day-use access point. Direct visitor use and river access to resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off the current eastern river access point located on a steep eroded bank, and actively restore the riverbank with brush layering. Where infrastructure is removed, de-compact soils and plant riparian species.

Alternative 3 would enhance meadow connectivity by removing segments of roads and trails that currently bisect meadows, interrupt sheetflow, and cause habitat fragmentation.

- **Bridalveil Meadow** – Reroute the 780-foot segment of the Valley Loop Trail (that crosses the meadow) closer to the base of the fill slope of the Valley Loop Road.
- **Slaughterhouse Meadow** – Reroute the portion of the Valley Loop Trail to an upland area out of wetlands.
- **El Capitan Meadow** – Fence the northern perimeter of meadow to protect the restoration area; designate appropriate access points using boardwalks and viewing platforms.
- **Ahwahnee Meadow** – Remove 900 feet of Northside Drive from the meadow; relocate the bike path to the south, restoring the meadow and riparian floodplain connectivity; restore meadow contours and native vegetation. Reroute trails through the meadow so they do not pass through wetlands, consolidating use with the Housekeeping footbridge trail where possible; remove associated fill and restore trails within wetlands.
- **Stoneman Meadow** – Remove the segment of Southside Drive that bisects the meadow (1,335 feet); realign access via Curry Village and a new road through Boys Town. Extend the boardwalk through wet areas to Curry Village (up to 275 feet).

Scenic Values

- Eliminate visual intrusion of Southside Drive through Stoneman Meadow.
- Eliminate visual intrusion of Northside Drive through Ahwahnee Meadow.

Cultural Values

- Remove three structures from sites representing the prominent historic patterns of development in Yosemite Valley: Sugar Pine Bridge, Ahwahnee Bridge, and Stoneman Bridge.
- Remove and relocate Superintendent's House and Garage (Residence 1) to the NPS housing area and, at a minimum, stabilize the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995).

Recreational Values

- Allow boating for up to 50 people per day using private vessels only, and restrict use to specific reaches of the river in Yosemite Valley. This reduction in boats would enhance dispersed recreation along the river corridor.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Alternative 3 would protect river-related recreational through infrastructure improvements where necessary, while reducing recreational activities that are not related to the river. These reductions would be made to accommodate high levels of ecological restoration activity and the objectives for visitor experience in this alternative. Alternative 3 would include the following changes to visitor activities and services, in addition to those common to Alternatives 2-6:

- Allow only private boating in this river segment. Private boats would be limited to the section of river between Housekeeping Camp and Cathedral Beach. Put-ins and take-outs would be limited to designated locations within Housekeeping Camp, Sentinel Beach, and Cathedral Beach. This use would be monitored by park law enforcement rangers and would be limited to 50 trips per day.
- Remove Housekeeping Camp shower houses, restrooms, laundry, and grocery store. Retain at least one restroom when reconfiguring the area for day use.

- Continue to provide staging at the Concessioner Stables for temporary pack camp operations at Merced Lake High Sierra Camp; eliminate commercial horse day rides originating from Yosemite Valley; reduce the stable size and provide overflow parking for campgrounds; retain kennel service.
- Remove Curry Village raft rental and bike rental stand.
- Remove the bike rental stand at Yosemite Lodge.
- Remove the ice skating rink at Curry Village.
- Remove the swimming pools at the Ahwahnee Hotel and the Yosemite Lodge.

Visitor Overnight Capacity: Camping

Camping would be slightly increased under Alternative 3 to 477 sites accommodating 2,958 people per night:

- **Backpackers Campground**: – Remove all 25 sites, 21 of which are within 150 feet of the ordinary high-water mark. Construct 16 new walk-in campsites west of Backpackers Campground, in less sensitive area out of the 100-year floodplain.
- **North Pines Campground** – Retain 52 campsites. Remove 34 sites from within 150 feet of the ordinary high-water mark; restore native riparian communities.
- **Upper Pines Campground** – Retain 238 campsites, removing 2 sites for archeological resource concerns. Construct a new recreational vehicle campground loop with 36 RV sites.
- **Lower Pines Campground** – Retain 61 campsites. Remove 15 sites from within 150 feet of the ordinary high-water mark.
- **Camp 4** – Retain 35 walk-in campsites and 35 parking spaces. Construct 35 additional campsites east of Camp 4; establish a new parking area (41 spaces) for the Camp 4 campground expansion in the disturbed footprint of the former service station near Camp 4.
- **Yellow Pine** – Four group campsites (up to 120 people) would be retained at the Yellow Pine Administrative Campground.

Visitor Overnight Capacity: Lodging

Lodging would be reduced to facilitate ecological restoration, day use, and camping. Lodging would total 621 units accommodating 2,069 people per night. Common to Alternatives 2-6, The Ahwahnee Hotel would continue to provide 123 lodging rooms. The following additional lodging would be retained, removed, or constructed under Alternative 3:

Preliminary drawings of road and parking improvements at Boys Town, as proposed in Alternative 3, have been completed to assess the feasibility of this project. See "Conceptual Site Drawings" at the end of the Alternative 3 discussion for site details and design drawings.

- **Curry Village** – Retain 355 lodging units including 290 canvas tent cabins, 18 units at Stoneman House, and 47 hard-sided cabin-with-bath units. Remove all existing cabins and associated structures at Boys Town. Provide 300 designated overnight parking spaces at the Curry Orchard Parking Area; restore ecological conditions to part of the existing parking area (removing 50 spaces) to improve natural surface flows to Stoneman Meadow.
- **Housekeeping Camp** – Remove all 266 lodging units and associated facilities from the 100-year floodplain. Convert area to a day-use river access point and picnic area. Retain one restroom for day use.
- **Yosemite Lodge** – Retain 143 lodging units; remove 4 buildings (containing 102 lodging units) from the 100-year floodplain.

Visitor Day-use Parking Capacity and Transit

Alternative 3 would significantly reduce peak daily visitation to Yosemite Valley. The day-use parking, regional transit, and tour bus capacities would accommodate up to 6,352 people at one time in Segment 2:

Preliminary site drawings for the Yosemite Village Day-use Parking Area and the new parking lot west of Yosemite Lodge, as proposed under Alternative 3, have been completed to assess the feasibility of these projects. See "Conceptual Site Drawings" at the end of the Alternative 3 discussion for site details and design drawings.

- Reduce available day-use parking spaces (- 740 spaces) for a total of 1,597 parking spaces.
- Retain tour bus parking at 15 spaces.
- Visitor circulation would be improved to reduce traffic congestion and provide a better arrival experience for visitors. Major actions would include the following:
- Redesign day-use parking at Yosemite Village to provide 550 designated spaces. Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area. Consolidate parking to the north of the road and out of the dynamic 10-year floodplain. Provide walkways leading to Yosemite Village separating vehicle and pedestrian traffic and eliminating conflicts. Redesigned traffic circulation patterns would not require roundabouts or pedestrian road crossings.
- Construct a parking lot with 150 designated day parking spaces and a new 3,000 square foot comfort station west of Yosemite Lodge; provide 15 bus loading/unloading spaces. Move the on-grade pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to alleviate pedestrian/vehicle conflicts.
- Redesign the intersection at Sentinel Bridge; switch Southside Drive to a two-way road between Curry Village and Sentinel Drive.

Due to the reductions in the day-use parking supply in this alternative (as compared to current peak demand), an East Yosemite Valley day-use parking reservation system would be required. The majority of day-use parking spaces would be reserved, with a small number being made available for more spontaneous users (to be distributed on-site along with spaces available from cancellations and no-shows). A reservation system is needed for this alternative, as demand for day-use visitation is expected to be high relative to the available capacity and continual East Valley traffic diversions are likely to be inadequate to handle the disparity (displacing East Valley crowding to other parts of the park on a regular basis). Although details of the system will require additional planning, general characteristics may include:

- **Seasonality** –The system would likely apply through the entire high use season, which can begin as early as mid-April and continue through October.
- **Daily hours** –The system would apply to day-use parking from 10 A.M. to 5 P.M. (periods of potential day-use crowding and congestion). No pass would be required for day-use visitors who leave parking areas before 10 A.M. or arrive after 5 P.M.
- **Primary allocation mechanism** – Reservations would be made through an online system. In-person reservations may also be made at entrance stations and visitor centers.
- **Secondary allocation mechanism** – Cancelled reservations and no shows would be filled at entrance gates or visitor centers after a certain hour of the day. Late arrivals will not be guaranteed a space in the day-use lots.
- **Timing of availability** – Approximately 80% of total spaces would be made available for reservations at intervals of six months (20%), three months (20%), one month (20%), and one week (20%) before a given date. Twenty percent will remain in the secondary system for spontaneous use

(along with cancellations and no shows). The online reservations system will continually track cancellations and make those available.

- **Compliance** – Parking passes will need to be shown when visitors arrive at entrance gates and displayed when using the day-use lots or parking for more than one hour at trailheads or roadside viewing areas. Visitors without passes can obtain passes at entrance stations (if they are available) or travel to other parts of the park; they would not be allowed to use day- or overnight-use parking areas in East Valley.
- **Fees** – An administrative fee may be collected with reservations.
- **Combining parking fees with Park Entrance Fees** – The NPS will explore options to pay park entrance fees when making parking pass reservations. This concept would allow visitors to enter a faster lane at entrance gates (because they only have to show previous payment). The Arch Rock entrance station would be relocated to a wider road section in El Portal.
- **Overnight visitor parking passes** – Visitors with overnight reservations would receive a parking pass for their vehicles. These visitors could park in overnight visitor lots, campgrounds, or for longer than one hour at trailheads and roadside viewing areas. They would not be allowed to park in East Valley day-use lots.

Regional transit service would be reconfigured to expand the number of routes but reduce runs on some routes (consistent with anticipated demand), as follows:

- Highway 140/El Portal Road (Merced to Yosemite Valley): Maintain service at 8 runs per day.
- Highway 41/Wawona Road between Fresno/Oakhurst and Yosemite Valley: Implement new public transit service at 1 run per day.
- Highway 120 West/Big Oak Flat Road (Groveland to Yosemite Valley: Reduce service to 1 run per day (summer only).
- Highway 120 East/Tioga Road (Mammoth Lakes to Yosemite Valley): Maintain service at 1 run per day (summer only).

TABLE 8-23: TRANSIT OPTIONS – ALTERNATIVE 3

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	8 runs per day (4 from Merced; 4 from Mariposa) (year round)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	1 run per day
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	1 run per day- Sonora to Yosemite Valley (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	1 run per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	5 minute peak interval between buses Year round except Visitor Center direct
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	15 minute interval between buses (summer only)
El Capitan Crossover	30 minute interval between buses (summer only)
West Yosemite Valley	No service
NOTE: *All Regional Transit runs are round trip.	

Under all the action alternatives, including Alternative 3, shuttle bus service would be improved by increasing the frequency of the year-round east Yosemite Valley service to five minute intervals during peak use periods. The Visitor Center Express service (summer only) would continue to run at 15 minute intervals. The El Capitan Crossover service (summer only) would continue to run at 30-minute intervals.

Administrative Activities

Administrative activities would be relocated further from the river:

- Relocate the Yosemite Lodge housekeeping and maintenance facilities to a location behind the Yosemite Lodge cafeteria.

Employee Housing and Employee Parking

Concessioner employee housing would be reduced. Compared to existing conditions, 229 fewer concessioner employees would be housed in Yosemite Valley. The remaining housing for 922 concessioner employees would be provided as follows:

- Provide housing for 436 employees at Curry Village.
  - Retain permanent housing in the Curry Village residential area (223 employees).
  - Retain employee housing at the Concessioner Stables in Yosemite Valley (49 employees).
  - Construct 16 dormitory buildings housing 164 employees.
- Provide housing for 340 employees at Yosemite Village:
  - Retain permanent housing at Indian Creek and Upper Tecoya (28 employees).
  - Retain Ahwahnee Row, Y Apartments, garage housing, and Hospital Row (43 employees).
  - Retain Tecoya Dorms (232 employees).
- Provide housing for 104 employees at Yosemite Lodge:
  - Construct new housing for 104 employees at Yosemite Lodge (two dormitory structures with 26 double-occupancy units each).

In this alternative, 967 parking spaces would be allocated for administrative uses (including parking spaces near residential areas).

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

Actions to protect and enhance river values in Segment 3 are all detailed in the section titled, "Actions Common to Alternatives 2-6" (beginning on page 8-47).

User Capacity, Land Use and Facilities Management

This alternative would provide for kinds and amounts of use similar to those that exist today. The majority of actions for Alternative 3 in Segment 3 are discussed in the "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boats would be allowed in this segment for this alternative; commercial use would remain prohibited. Boating would be allowed from Pohono Bridge to El Portal (Segment 4). Boaters would be allowed to put in and take out at any of the roadside pull-outs. This use would be managed by a permit system and limited to five boats per day.

Transit Options

Public transit options along this segment would be expanded as described in Segment 2, above.

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 4 for Alternative 3 are addressed in "Actions Common to Alternatives 2-6" (see page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 3 would provide for kinds and amounts of use similar to those that exist today. User capacity in Segment 4 for Alternative 3 is mostly affected by the increase in employee housing in El Portal. While all new units would be built outside of the 100-year floodplain, most would fall within the river corridor boundary.

Visitor Activities and Services

Most visitor activities and services in Segment 4 are considered in "Actions Common to Alternatives 2-6". Additional actions are listed below.

- Boating – Private boats would be allowed in Segment 4. Anticipated use would be mostly rafts and kayaks. Boaters would be allowed to paddle the stretch of river from the park boundary at Yosemite View Lodge to the Foresta Bridge (at which point river use is managed under the jurisdiction of the U.S. Forest Service). Boaters would be able to use put-ins and take-outs west of the hotel, at the store/gas station and at the Red Bud launch site. This use would be regulated through a permitting system that allows for up to five boats per day.

Visitor Overnight Capacity

No NPS overnight accommodations for the public are proposed in Segment 4 under any alternative. The Yosemite View complex is located on private land near the park boundary, upon which land use is regulated by the County of Mariposa.

Visitor Day-use Capacity

Day-use parking capacities would not change for Segment 4 in Alternative 3 (214 spaces).

Administrative Activities

All administrative activities in Segment 4 are considered in "Actions Common to Alternatives 2-6" (see page 8-47).

Employee Housing Capacity

In Alternative 3, high density employee housing would be added to the El Portal Village Center (12 beds) and Rancheria Flat (19 beds). All new units would be outside of the 100-year floodplain. These units would be added to accommodate for the units removed from Yosemite Valley.

Employee and Administrative Parking Capacity

Most employee and administrative parking actions are discussed in "Actions Common to Alternatives 2-6" (see page 8-47). The additional housing proposed in Alternative 3 would also include 27 employee overnight parking spots for new units in El Portal Village Center and in Rancheria Flat.

Transit Options

Regional transit options would maintain existing service along the Highway 140 corridor. For a complete summary of transit activity that passes through this segment, see the Segment 2 summary of transit options above.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

No actions are required to protect river values under Alternative 3.

User Capacity, Land Use and Facilities Management

Alternative 3 would provide for kinds and amounts of use similar to those that exist today in Segment 5. The majority of actions for Alternative 3 in Segment 5 are discussed in the "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boating would be allowed in this segment. Use in this segment is likely to consist of short floats using inflatable rafts or other craft that can be carried into this remote area on foot. Use levels would be unrestricted, given the expected low use (due to the remoteness and inaccessibility of this segment and the level of effort required to enjoy this activity).

Transit Options

Specific transportation options for reaching Segment 5 trailheads are listed below under Segment 7.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

In addition to the actions detailed in the section titled "Actions Common to Alternatives 2-6" (see page 8-47), protection and enhancement of cultural values and water quality would be accomplished through the actions described below.

Cultural Values/Water Quality

- Stock campground – Relocate stock campground (2 sites) from area with sensitive cultural resources to the vicinity of the Wawona stables.
- Wawona Campground – Retain 69 sites. Remove 27 sites that are either within the 100-year floodplain or in culturally sensitive areas.

User Capacity, Land Use and Facilities Management

Alternative 3 would provide for kinds and amounts of use similar to those that exist today. Notable changes to these segments in Alternative 3 would be the removal of the Wawona Golf Course and changes to the capacity of the Wawona Campground. The majority of actions for Alternative 2 in Segment 7 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

- Boating – Private boats would be allowed in Segment 7. Expected use would be kayaks and other small whitewater boats. Boating will be permitted below Wawona's Swinging Bridge to the park boundary, where river use is subject to U.S. Forest Service management standards. Boaters would be able to use put-ins and take outs at Swinging Bridge, the Wawona Store area, South Fork Picnic Area, and below the campground. Because of seasonal limitations and low river volumes, use level is expected to be low, and therefore would not be limited. River use and management will be subject to monitoring by NPS resources management staff, and enforcement by NPS law enforcement rangers.
- Golfing – Remove the Wawona Golf Course and ecologically restore the area while retaining use as a spray field for reclaimed water. Adapt the Golf Shop for another use that supports Wawona Hotel operations.
- Tennis – Remove the Wawona Hotel Tennis Court.
- Eliminate commercial horseback day rides originating from the Wawona stables. Remove the stables and re-purpose area as a stock use campground.

Visitor Overnight Capacity

The Wawona Campground would be reduced from 97 to 70 sites (444 people), including a group camping site (to accommodate up to 30 persons). The two campsites at the Wawona stock camp would be relocated to the Wawona stables and would accommodate six people per night each (12 people per night total). Total overnight capacity for the Wawona Campground would be 456 people.

Total overnight capacity for Segment 7 would be 104 lodging units and 72 campsites that, together, accommodate 703 people.

Visitor Day-use Capacity

Total visitor day-use capacity for this area would be increased from 1,295 to 1,321 people at one time. This increase is due to new regional transit options that contribute up to 26 people at one time to this segment.

Transit Options

In-park shuttle options between Wawona and Yosemite Valley and Wawona and Mariposa Grove would continue. New regional transit options would be provided along the Highway 41/Wawona Road corridor with one run between Fresno/Oakhurst and Yosemite Valley daily. Alternative 3 would have a maximum capacity of 26 people at one time arriving via regional transit.

Segment 8: South Fork Merced below Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in Alternative 3 that are specific to this segment.

User Capacity, Land Use and Facilities Management

Alternative 3 would provide for kinds and amounts of use similar to those that exist today in Segment 8; significant changes are not proposed. The majority of actions for Alternative 3 in Segment 8 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boating would be allowed in this segment. Use in this segment would consist of short floats and pass-through trips by only the most experienced kayakers. Permits would not be required as the anticipated use level is very low.

Transit Options

Transit services for access to this segment are described above under Segment 7 (see above).

Conceptual Site Drawings

Boys Town

In Alternative 3, Southside Drive would be removed from Stoneman Meadow and visitor traffic re-routed through Curry Village. All of the Boys Town cabins and facilities would be removed, and the area would be restored to natural conditions. The Curry Orchard Parking Area would be partially restored to facilitate Stoneman Meadow restoration, while retaining approximately 300 parking spaces.

Yosemite Village Day-use Parking Area

In Alternative 3, as in Alternative 2, the 12-acre Yosemite Village (Camp 6) day-use parking area (and all associated roadway improvements) would be removed from the 10-year floodplain to facilitate riparian restoration goals and prevent further resource damage. Restoration actions would remove non-native fill material, re-contour the topography, and re-introduce native vegetation to restored areas. A redesigned parking area would be improved to provide 550 parking spaces. Northside Drive would be abandoned east of the intersection with Village Drive (access to the Ahwahnee Hotel) and realigned to the south edge of the parking area (where it would connect Sentinel Drive and Village Drive). By consolidating the parking area behind the Village Store, adding new and improved walkways to Yosemite Village, and realigning the roadway around the parking area, vehicle and pedestrian conflicts would be eliminated. A new bus passenger unloading area would be established east of the Village market, and five new spaces would be provided for bus parking. The Concessioner General Office, Concessioner Garage, and Art Activity Center (former bank building) would be removed, while the Village Sport Shop would be repurposed as a visitor contact station.

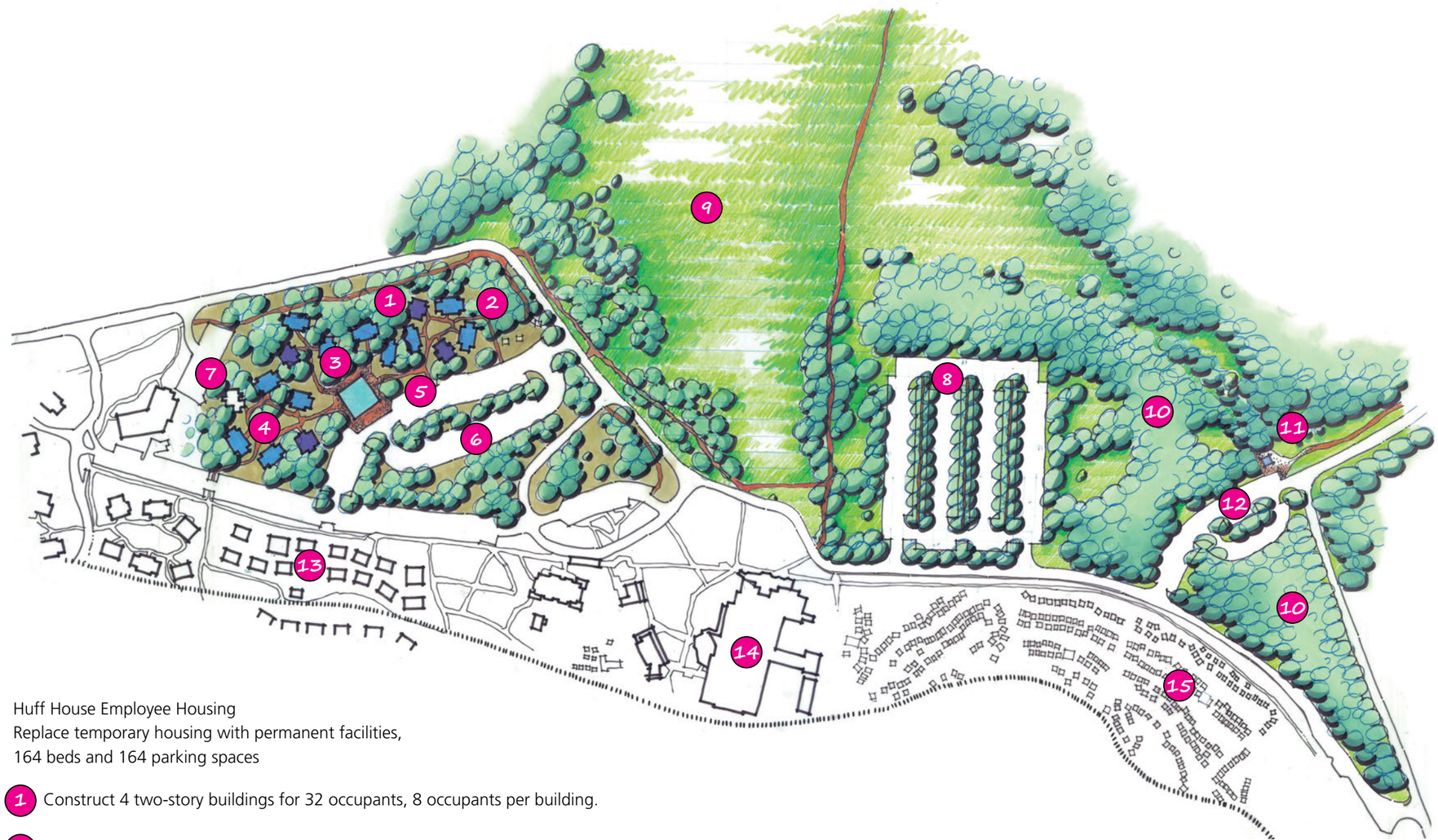
The project area for improvements at the Yosemite Village Day-use Parking Area in Alternative 3 would cover approximately 22 acres, most of which is currently developed, and would include: 1.2 acres for existing building removal; 1,000 square feet for the new restroom; 5.4 acres of pavement removal; 1.7 acres of new roadway; 2.4 acres for new parking; 14,900 square feet of utility service trenching; and 38,000 square feet for new pedestrian pathways. Construction staging would cover an area of approximately 2 acres.

Yosemite Lodge

In Alternative 3, the area west of Yosemite Lodge (once known as the annex, but vacated after buildings were damaged in the 1997 flood) would be redeveloped to provide 150 day-use parking spaces, parking for 15 buses, a new 3,000-square-foot comfort station, and a re-located shuttle stop. The existing tour bus drop off area would be relocated to the Highland Court area. The VIP Office, linen storage and laundry buildings, modular housing at Highland Court, and historic employee Thousands Cabins would be removed. Linen storage and laundry would be replaced by an addition to the food service building.

The project area for improvements west of the Lodge would cover 11.2 acres, most of which is currently developed, and would include: 55,850 square feet of existing building and pavement removal; 3,000 square feet for the new comfort station and shuttle stop; 13,300 square feet of utility service trenching; 2.5 acres for parking; and 2,500 square feet for pedestrian pathways. Temporary construction staging would take place over a 2-acre area within the existing footprint. Existing vegetation would be retained to separate and screen parking bays while bioswales would serve to filter and treat storm water run-off.

Also in Alternative 3, the temporary modular housing at Highland Court and the Thousand Cabins would be removed and replaced with two new buildings housing 104 concessioner employees. In addition, a new parking area would provide 78 employee parking spaces, parking for 3 shuttle buses, and 53 day-use parking spaces for the public. The project area for the two housing sites would cover a total of 7.4 acres and would include 45,500 square feet of preparation for the new buildings; 5,500 square feet of utility service trenching; and 1.8 acres for parking.



Huff House Employee Housing
Replace temporary housing with permanent facilities,
164 beds and 164 parking spaces

1. Construct 4 two-story buildings for 32 occupants, 8 occupants per building.
2. Construct 11 two-story buildings for 132 occupants, 12 occupants per building.
3. Provide common recreational area, approximately 3,600 square feet.
4. Build plaza areas and walkways with site furnishings, accent paving, and enhanced landscaping.
5. Construct a shuttle bus stop.
6. Remove ice rink and bicycle rentals. Construct an employee parking facility with 164 spaces.
7. Retain historic residence for housing purposes.

Curry Orchard Parking Area

8. Improve parking area with 300 spaces and landscape buffers with trees and bioswales that will treat storm water run-off. Provide pedestrian walkways.

Stoneman Meadow Restoration

9. Remove Stoneman Road and adjacent recreation trail. Extend boardwalk from existing terminus (at Stoneman Road) to Curry Village Pavilion area, improve hydrology, remove invasive species, promote weed control and plant native species.

Boys Town

10. Remove existing guest accommodations and ecologically restore lands.
11. Relocate Campground Reservation Center and provide 8 parking spaces.
12. Construct a roadway to connect Curry Village and East Valley campgrounds. Provide additional roadside parking.

Existing Curry Village Visitor Services

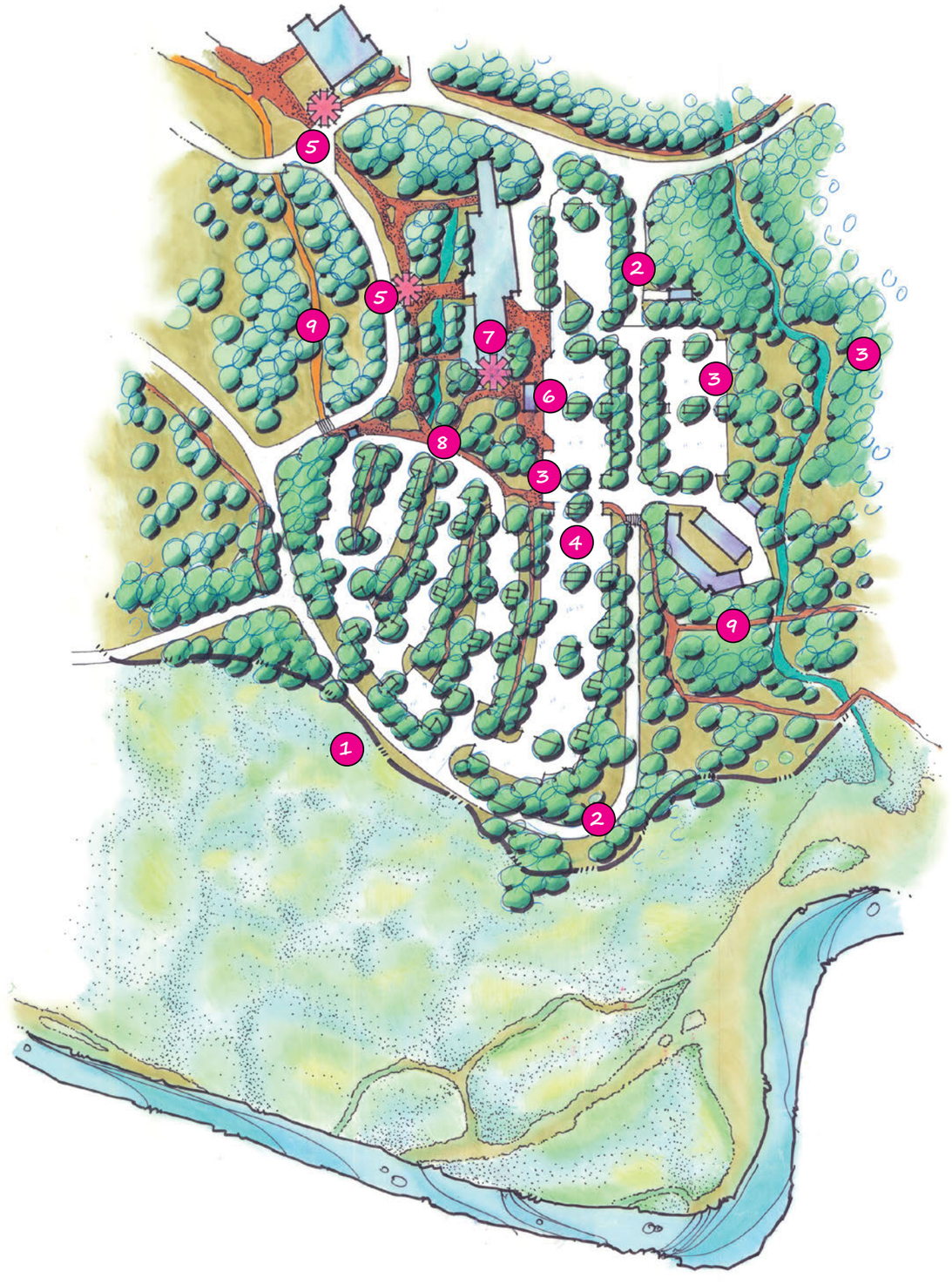
13. Retain existing historic cabins and Stoneman Cottage (65 lodging units).
14. Retain existing Curry Pavilion.
15. Retain 290 tents.

NORTH

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

Alternative 3
Conceptual Site Drawing for Curry Village
Yosemite National Park
United States Department of the Interior • National Park Service

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1. Use the 10-year floodplain to establish limits of development. Restore wetlands and meadow.

2. Reroute Northside Drive to conform to the floodplain extent and south edge of day-use parking area. Northside Drive is eliminated east of this location.

3. Eliminate Concessioner General Office and Garage between the Village Store and Ahwahnee Meadow, providing more space for visitor parking. Employee dormitories and housing would be removed in Alternative 2 (as drawn), but retained in Alternative 3.

4. Provide 550 day-use parking spaces in between Northside Drive and Yosemite Village. Integrate landscaped areas to retain large numbers of trees, and include bioswales that will treat storm water run-off. Improve access through a system of pedestrian pathways leading to the Yosemite Village mall.

5. Retain existing shuttle stops on Visitor Center Loop Drive.

6. Establish bus passenger unloading area east of the Yosemite Village mall.

7. Replace Village Sport Shop with visitor contact station.

8. Eliminate art activity center and improve pedestrian access.

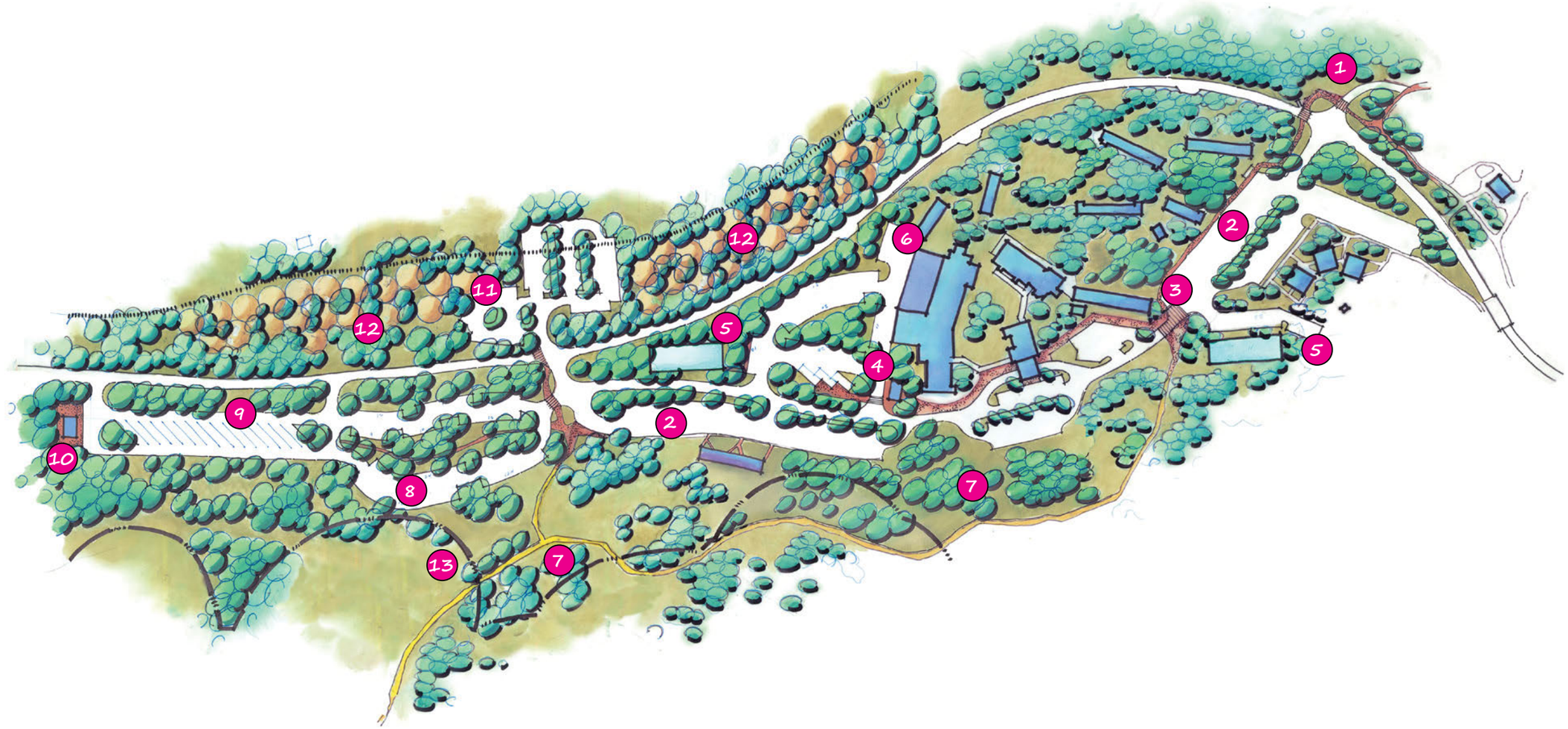
9. Improve pedestrian connections and bike paths east and west of the day-use parking area.

NORTH

Alternatives 2 and 3
Conceptual Site Drawing for Yosemite Village Day-use Parking Area
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Move pedestrian crossing to Yosemite Falls west of the existing intersection.
2. Maintain parking for overnight guests.
3. Enhance pedestrian circulation system.
4. Construct tour bus loading and unloading area, with shelter.
5. Construct employee housing in 2 two-story buildings with 52 occupants per building and 39 employee parking spaces per building.
6. Relocate linen storage and laundry buildings to an addition to the food service building. Reconfigure truck loading and unloading area.
7. Remove existing NPS volunteer office and 4 guest lodging buildings from the 100-year floodplain, restore vegetation and hydrological processes.
8. Construct 150 day-use parking spaces at Yosemite Lodge Day-use Parking Area. Maintain existing vegetation as buffers to separate and screen parking bays, provide pedestrian pathways and bioswales that will retain storm water run-off.
9. Construct 15 tour bus parking spaces.
10. Construct a shuttle bus stop with shelter and comfort station.
11. Construct 41 additional parking spaces at Camp 4.
12. Retain 35 existing walk-in campsites at Camp 4. Construct 35 additional walk-in sites opposite existing parking facility. Occupancy is limited to 6 campers per site. Standard walk-in campsite is 3,850 square feet (70-foot diameter), including 1,200 square feet of clearance with a 15-foot perimeter buffer.
13. Protect and enhance a 150-foot riparian buffer.

NORTH

Alternative 3
Conceptual Site Drawing for Yosemite Lodge and Camp 4
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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ALTERNATIVE 4: RESOURCE-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION

Overview

The guiding principles of Alternative 4 include restoration of portions of the floodplain and the riparian area within 150 feet of the river. This alternative focuses on providing only those commercial services and facilities that facilitate resource-based visitor experiences. It accommodates lower maximum visitor use levels than today, with increases in overnight camping capacity and a decrease in the overnight lodging capacity.

Management actions in Alternative 4 would:

- Restore 225 acres of meadow and riparian habitat.
- Significantly increase the campsite inventory in all river segments (+37%) and in Yosemite Valley (+50%).
- Reduce the lodging inventory in all river segments (-20%) and in Yosemite Valley (-20%).
- Reduce parking for Yosemite Valley day use (-12%).
- Reduce commercial services provided by the park's primary concessioner from current levels.
- Make targeted changes to the traffic circulation pattern in Yosemite Valley to accommodate ecological restoration goals and reduce traffic congestion.
- Establish a user capacity of 16,200 people at one time for Yosemite Valley, with peak visitation estimated at 17,000 visitors per day.
- Continue to manage overnight-use capacity through reservation systems for lodging and camping, and through wilderness permits.
- Manage user capacity for East Yosemite Valley through permits and a mandatory day-use parking reservation system during peak season.

Under Alternative 4, visitors to Yosemite Valley would experience some changes in circulation and roadways that will allow for meadow and floodplain restoration while improving the visitor experience. Additional restoration would be accomplished by removing a road segment from within Stoneman Meadow. Visitors would experience a clear "sense of arrival" at a pedestrian-friendly parking area in Yosemite Village. As in other alternatives, the parking area would be moved away from the river, some administrative buildings would be removed, and roads and intersections would be modified to increase efficiency. During the peak summer season, day-use visitors wishing to park private vehicles in the east end of Yosemite Valley would be required to obtain a reservation and would be directed to park in designated areas. A remote parking area would be provided in El Portal with a transit connection to Yosemite Valley.

At Curry Village, the tent cabins at Boys Town would be removed and replaced by a campground. The bicycle rental and ice skating rink would be removed, while food service, groceries, pool, raft rental, and the mountaineering shop would remain. Private boaters and those renting commercial rafts would still be able to raft or kayak in Yosemite Valley, with additional reaches of the Merced River opened to boating. Cyclists would be able to ride bicycles in Yosemite Valley with personal equipment or equipment rented outside the park. The stables near Curry Village would be removed and commercial horseback day rides discontinued. Private horseback riding would continue in Yosemite Valley and further into the high country. At

Housekeeping Camp, many of the lodging units would be removed from the floodplain and improved beach access for day use would be provided. The Happy Isles snack stand would be removed.

Overnight accommodations would include a slight reduction in lodging, and the largest increase in camping among all the alternatives, including changing Boys Town (in Curry Village) and the Concessioner Stables to campgrounds. Camping would continue to be provided at Lower, Upper, and North Pines campgrounds, and Backpackers Campground would be relocated to a site further west. The bike rental, pool, snack stand and post office would be removed at Yosemite Lodge, while food service would remain. A new day-use parking area would be provided west of the Lodge in an area currently used for bus parking and storage. A new grade-separated pedestrian crossing would be constructed to alleviate pedestrian and vehicle conflicts at the intersection of Yosemite Lodge Drive and Northside Drive. The pool and tennis courts would be removed at the Ahwahnee Hotel.

The West Valley would retain its overall natural character, with limited structures, and continue to serve as a destination for lower impact recreational activities such as hiking, rock climbing, photography, and scenic viewing.

Those visitors hiking to the Wilderness along the Merced River corridor would be able to camp in designated backpackers campgrounds. The Merced Lake High Sierra Camp and all associated infrastructure would be removed.

In Wawona, lodging would remain available at the Wawona Hotel and the golf course and tennis courts would be retained. The Wawona campground would be reduced in size and commercial horseback riding would no longer be available at the Wawona stables. Private boating would be allowed on the South Fork Merced. Transit service would be expanded by the addition of a new run from Fresno to Yosemite Valley along Highway 41 (Wawona Road).

Actions to Protect and Enhance River Values

Alternative 4 would protect and enhance river values through ecological restoration efforts focused on improving both the habitat quality of the riparian zone and the hydrologic function of the river. River values would be maintained without impacting the existing traffic circulation pattern and infrastructure. This alternative would ecologically restore lands currently occupied by the Merced Lake High Sierra Camp and a portion of Housekeeping Camp that is frequently inundated with flood waters. All campsites and associated infrastructure within 150 feet of the river would be removed. Alternative 4 would establish a Valley Oak habitat protection area in El Portal. The alluvial processes of the river would be enhanced by removing two bridges. The hydrologic connectivity of meadows to the riparian floodplain would be enhanced by removing a segment of road bisecting Stoneman Meadow.

Cultural and scenic values would be protected and enhanced as described under "Actions Common to Alternatives 2-6" (beginning on page 8-47). Certain recreational values would be enhanced with the removal of the Merced Lake High Sierra Camp, and improvement in traffic circulation would benefit all visitors to Yosemite Valley. Table 8-24 provides a summary of the proposed actions that would occur under Alternative 4 to protect and enhance river values.

TABLE 8-24: ADDITIONAL ACTIONS TO PROTECT AND ENHANCE RIVER VALUES, ALTERNATIVE 4

Ecological Restoration Actions (Free Flow, Water Quality, Geologic/Hydrologic, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	225 acres: 176 acres (common to all) plus an additional 49 acres (refer to Appendix E for specific locations)
Riprap to be Removed	6135 linear feet: 5,700 linear feet (common to all) plus an additional 435 feet (refer to Appendix E Restoration Map Series for specific locations)
Segment 1: Wilderness above Nevada Fall	
Riparian Buffer / Floodplain	▪ Remove the Merced Lake High Sierra Camp and restore the site to natural conditions.
Segment 2: Yosemite Valley	
Free Flow /Geological/ Hydrological Values	▪ Remove Ahwahnee and Sugar Pine bridges to enhance the alluvial processes of the river.
Riparian Buffer / Floodplain	▪ Ecologically restore 19.7 acres of habitat in the Upper and Lower River Campgrounds area; construct campsites 150 feet away from the river. ▪ Move Yosemite Village Day-use Parking Area parking north at least 150 feet away from the river. ▪ Remove portions of North Pines, Lower Pines, and Wawona Campgrounds that are within 150 feet of the river. ▪ Remove portion of Housekeeping camp that is within the ordinary high-water mark and in areas of frequent inundation and restore these areas to natural conditions.
Meadow Restoration	▪ Remove 1,335 feet of Southside Drive through Stoneman Meadow to enhance connectivity of the meadow and floodplain.
Recreational Values	
Segment 1: Wilderness above Nevada Fall	
Wilderness Recreation	▪ Enhance Wilderness character by removing the Merced Lake High Sierra Camp and converting this area to designated Wilderness. ▪ Reduce zone capacities and the size of the Little Yosemite Valley camping area. ▪ Expand the footprint of the Merced Lake designated camping area into the area vacated by the High Sierra Camp (to reduce person density in this location).

User Capacity, Land Use and Facilities Management

Alternative 4 would focus on providing resource-based visitor experiences, increasing camping opportunities, and reducing commercial services. Although the overall number of visitors to Yosemite Valley would be reduced, overnight use levels would slightly increase. Table 8-25 provides a summary of user capacities by use type and location.

Visitor Activities and Services

Alternative 4 would reduce commercial facilities and services. Redundant retail stores and snack stands would be removed and commercial horseback day rides that would be discontinued in Yosemite Valley and Wawona. Alternative 4 would also remove the bicycle rentals at Curry Village and Yosemite Lodge, the ice skating rink, the grocery store at Housekeeping Camp, and two swimming pools in Yosemite Valley.

TABLE 8-25: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 4

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 4	
	Unit Type	Units	People	Units	People
Wilderness Above Nevada Fall					
Visitor Overnight Use	Zone Capacities & Beds	380	380	270	270
Visitor Day Use	Day Hikers	350	350	350	350
Employee Housing (in camps)	Employee Beds	15	15	10	10
Administrative Day Use	Day Patrols	5	5	5	5
Yosemite Valley					
Visitor Overnight Use	Rooms & Campsites	1,500	6,564	1,524	7,224
Visitor Day Use	Parking Spaces & Buses	-	11,727	-	7,554
Employee Housing	Employee Beds	1,315	1,315	1,087	1,087
Administrative Day Use	Parking Spaces	166	332	166	332
Merced Gorge					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	180	869	180	869
Employee Housing	Employee Beds	9	9	9	9
Administrative Day Use	Parking Spaces	2	4	2	4
El Portal					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	214	740	414	740
Employee Housing	Employee Beds	220	427	190	483
Administrative Day Use	Parking Spaces	610	1,220	610	1,220
South Fork Above Wawona					
Visitor Overnight Use	Zone Capacities	20	20	20	20
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1
Wawona					
Visitor Overnight Use	Rooms & Campsites	203	865	176	703
Visitor Day Use	Parking Spaces & Buses	-	1,295	-	1,399
Employee Housing	Employee Beds	121	121	121	121
Administrative Day Use	Parking Spaces	30	60	30	60
South Fork Below Wawona					
Visitor Overnight Use	Permits	-	-	-	-
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1

Visitor Overnight Capacity

Camping

Under Alternative 4, the campsite inventory in Yosemite Valley would be increased by 50%. All campsites within 150 feet of the river would be removed and replaced by new campsites at numerous locations throughout the East Valley. A total of 701 campsites would be provided in Yosemite Valley and 773

campsites would be provided in the river corridor. Table 8-26 provides a summary of the proposed changes to camping.

TABLE 8-26: CAMPING FACILITIES – ALTERNATIVE 4

Existing Locations	Alt 1 (No Action)	Alt 4	Details
Backpackers	25 sites	0 sites	25 walk-in sites removed, of which 21 are within 150 feet of the river; 16 of these walk-in sites would be relocated west of Backpackers
Camp 4	35 sites	35 sites	No change to this National Historic Register Site
Lower Pines	76 sites	61 sites	15 sites within 150 feet of the river removed
North Pines	86 sites	52 sites	34 sites within 150 feet of the river removed
Upper Pines	240 sites	238 sites	2 sites removed for archeological resource concerns
Yellow Pine Administrative	4 sites	4 sites	No changes to these group administrative sites
Wawona Campground	99 sites	72 sites	27 sites removed within 150 feet of river or in culturally sensitive areas
Total Existing Locations	565 sites	462 sites	
New Locations	**Sites**	**Alt 4**	**Details**
West of Backpackers	0 sites	16 sites	16 walk-in sites relocated from Backpackers Campground to less sensitive area outside 100-year floodplain
East of Camp 4	0 sites	35 sites	35 walk-in sites constructed in area east of Camp 4
Upper Pines	0 sites	87 sites	36-site RV loop and a walk-in campground with 49 sites and 2 group sites constructed
Upper River	0 sites	32 sites	30 walk-in and 2 group sites constructed 150 feet from river in the area of the Upper River Campground
Lower River	0 sites	40 sites	40 walk-in sites constructed 150 feet from the river in the former footprint of the Lower River Campground
Yosemite Lodge	0 sites	20 sites	20 RV sites constructed west of Yosemite Lodge and adjacent to parking area
Boys Town	0 sites	40 sites	40 walk-in sites constructed
Concessioner Stables	0 sites	41 sites	Stables redeveloped as a campground with 41 drive-in sites
Total New Camping	0 sites	311 sites	
Total Camping in Corridor	565 sites	773 sites	

Lodging

In-park lodging availability would be reduced by approximately 20%, as compared to Alternative 1 (No Action). Management actions related to lodging would focus on removing lodging units that are frequently inundated by flood waters at Housekeeping Camp. All existing infrastructure at the Merced Lake High Sierra Camp would be removed, allowing the area to be converted to designated Wilderness. Curry Village lodging would remain with the exception of Boys Town, which be replaced with a new campground. No new permanent lodging would be constructed in Alternative 4 in any part of the river corridor. As a result of these actions, the in-park lodging inventory would be reduced from 1,160 units to 927 units. Table 8-27 provides a summary of the proposed changes to lodging and the reasons for those proposed changes.

Parking Inventory and Access Improvements

Day-use parking capacity in Yosemite Valley would be reduced by 21% compared to current levels. Day-use capacity would be actively managed and potentially restricted during peak use season (May through

September). A day-use parking reservation system for East Yosemite Valley would be implemented during the peak season.

TABLE 8-27: LODGING FACILITIES – ALTERNATIVE 4

Wilderness	Alt 1 (No Action)	Alt 4	Details
Merced Lake High Sierra Camp	22 units (60 beds)	0 units	Lodging facility removed and area converted to designated Wilderness
Yosemite Valley	**Alt 1**	**Alt 4**	**Details**
Ahwahnee Hotel	123 rooms	123 rooms	No change at this National Historic Landmark
Housekeeping Camp	266 units	100 units	Remove 166 units that are seasonally inundated, 34 of which are within ordinary high-water mark
Curry Village	400 units	355 units (290 canvas tent cabins and 65 hard-sided units)	Retain 290 canvas tent cabins Retain18 units at Stoneman House Retain 47 cabin-with-baths At Boys Town, Southside Drive would be re-routed and redeveloped as a 40-site campground
Yosemite Lodge	245 rooms	245 rooms	No changes at this lodging facility
Wawona	**Alt 1**	**Alt 4**	**Details**
Wawona Hotel	104 rooms	104 rooms	No change at this National Historic Landmark
Total Lodging in Corridor	1,160 units	927 units	

Table 8-28 provides a summary of the total number of parking spaces provided in each river segment.

The most significant changes to parking and circulation would take place in the vicinity of Yosemite Village Day-use Parking Area, Yosemite Lodge, and El Portal. The Yosemite Village Day-use Parking Area would be redesigned to provide 750 parking spaces. At Yosemite Lodge, proposed changes include a new day-use parking area west of the lodge designed to provide 150 parking spaces. Overflow parking during times of peak visitation would be provided in El Portal at the Abbieville site (200 parking spaces). The NPS shuttle system would be expanded to serve locations in West Yosemite Valley, including Bridalveil Fall. The ***total*** parking inventory in East Yosemite Valley (including day, overnight, and administrative uses) would be approximately 4,800 spaces. Including the remote parking in El Portal, a total of 5,000 parking spaces would be provided for visitor and administrative access to Yosemite Valley.

Transit services would remain unchanged on the Highway 140 and Highway 120 East corridors. Service on the Highway 120 West corridor would maintain two round-trip runs per day. Four round-trip runs per day would be added to the Highway 41 corridor. All within-park shuttle services would maintain the existing base levels of service. Additionally, East Yosemite Valley shuttle intervals would be reduced to five minutes and service would be expanded to serve Bridalveil Fall during the peak summer season.

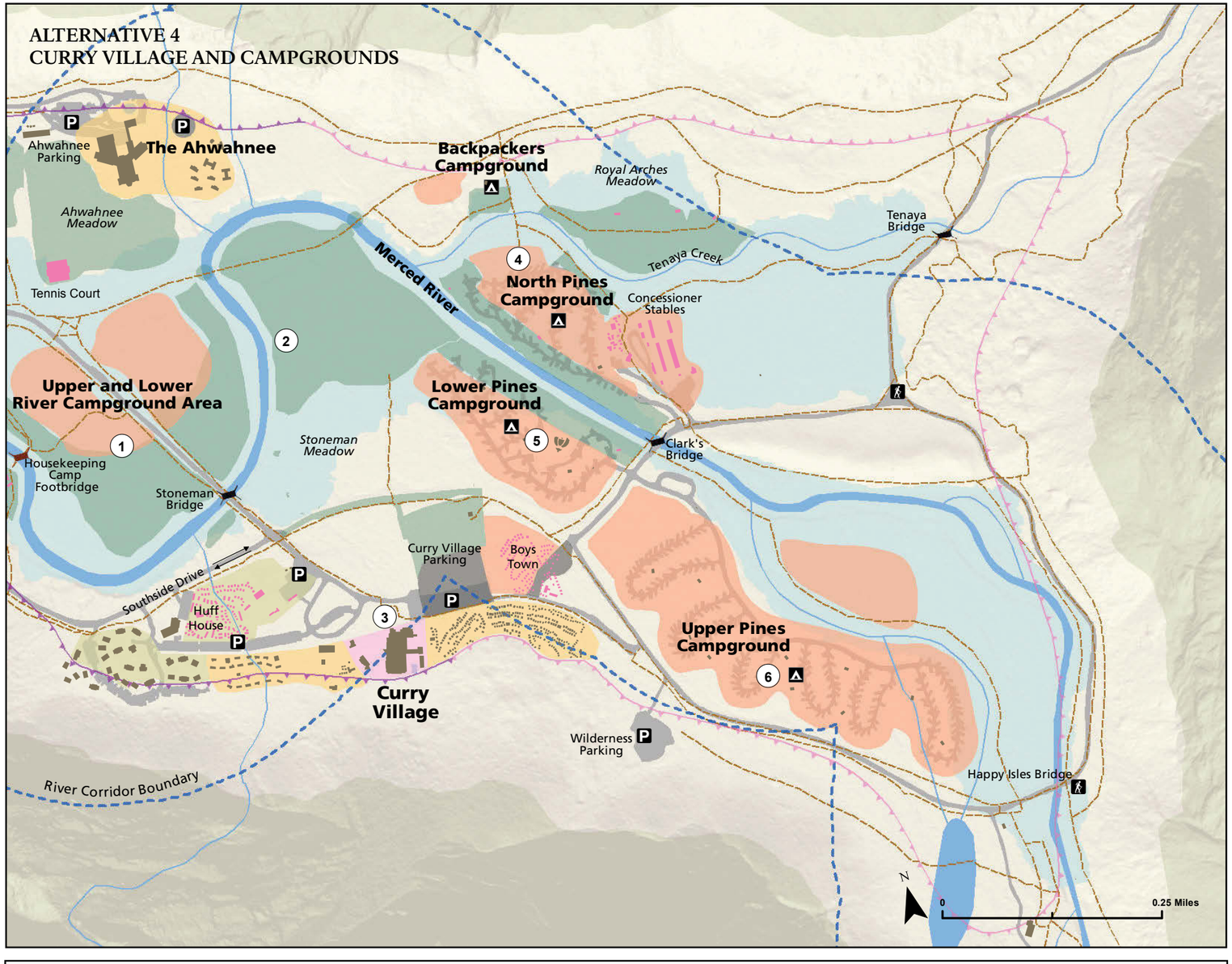
TABLE 8-28: NUMBER OF DAY-USE PARKING SPACES IN SEGMENTS – ALTERNATIVE 4

Location	Alt 1 (No Action)	Alt 4
Segment 2: Yosemite Valley	2,337 spaces	1,845 spaces
Segment 3: The Gorge	180 spaces	180 spaces
Segment 4: El Portal*	214 spaces	414 spaces*
Segment 7: Wawona	290 spaces	290 spaces
Total Parking	3,021 spaces	2,729 spaces

NOTE:
* The 200 new spaces in El Portal are located in the Abbieville Remote Parking area. While these spaces are located in El Portal and are therefore counted as part of the parking inventory of Segment 4, most of the use associated with these spaces will occur in Yosemite Valley.

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ALTERNATIVE 4: RESOURCED-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

1. Upper and Lower River Campground
   - New Lower River Campground: Construct a new campground 150 feet away from the river with 40 walk-in sites. Provide picnic tables and parking for day use and directed river access to the Housekeeping Camp eastern beach. Restore hydrologic processes in the southeast portion of the area.
   - New Upper River Campground: Construct a new campground 150 feet away from the river with 30 walk-in sites and 2 group sites. Restore hydrologic processes in the south east portion of the area.
   - Restoration: Restore 19.7 acres of floodplain. Protect the riverbank from trampling by fencing sensitive areas.

2. River Reach Between Bridges
   - Ahwahnee and Sugar Pine Bridges: Remove the Ahwahnee and Sugar Pine bridges to enhance free-flowing conditions. Restore to natural conditions. Re-route the multiple-use trail to the north bank of the river.
   - Stoneman Bridge: Mitigate effects of bridge to free-flowing condition through engineered solutions: place large wood to lessen scouring, and use brushlayering and a constructed log jam. Add culverts along Northside Drive.

3. Curry Village Area
   - Lodging: Total would be 355 guest units, including: 290 tents in Curry Village retained; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained. At Boys Town, Southside Drive would be re-routed and a 40-site campground would be constructed.
   - Ecological Restoration: Remove Southside Drive through Stoneman Meadow to enhance the hydrologic connectivity of the meadow. Re-align road through the Boys Town area instead of the meadow. Extend meadow boardwalk up to 275 feet to Curry Village.
   - Curry Orchard Parking Area: Provide 300 parking spaces. Ecologically restore part of the existing parking area to accommodate Stoneman Meadow restoration goals. Re-design parking lot using best management practices to increase drainage to Stoneman Meadow and protect water quality. Remove apple trees to mitigate human-bear interactions and plant native vegetation.
   - Huff House Housing: Remove temporary housing at Huff House. Construct 16 buildings, housing 164 employees, using the same dormitory prototype.
   - Curry Village Day-use Parking: Within the existing disturbance footprint at the Curry Village Ice Rink area, provide visitor day-use and employee commuter parking for 105 vehicles.

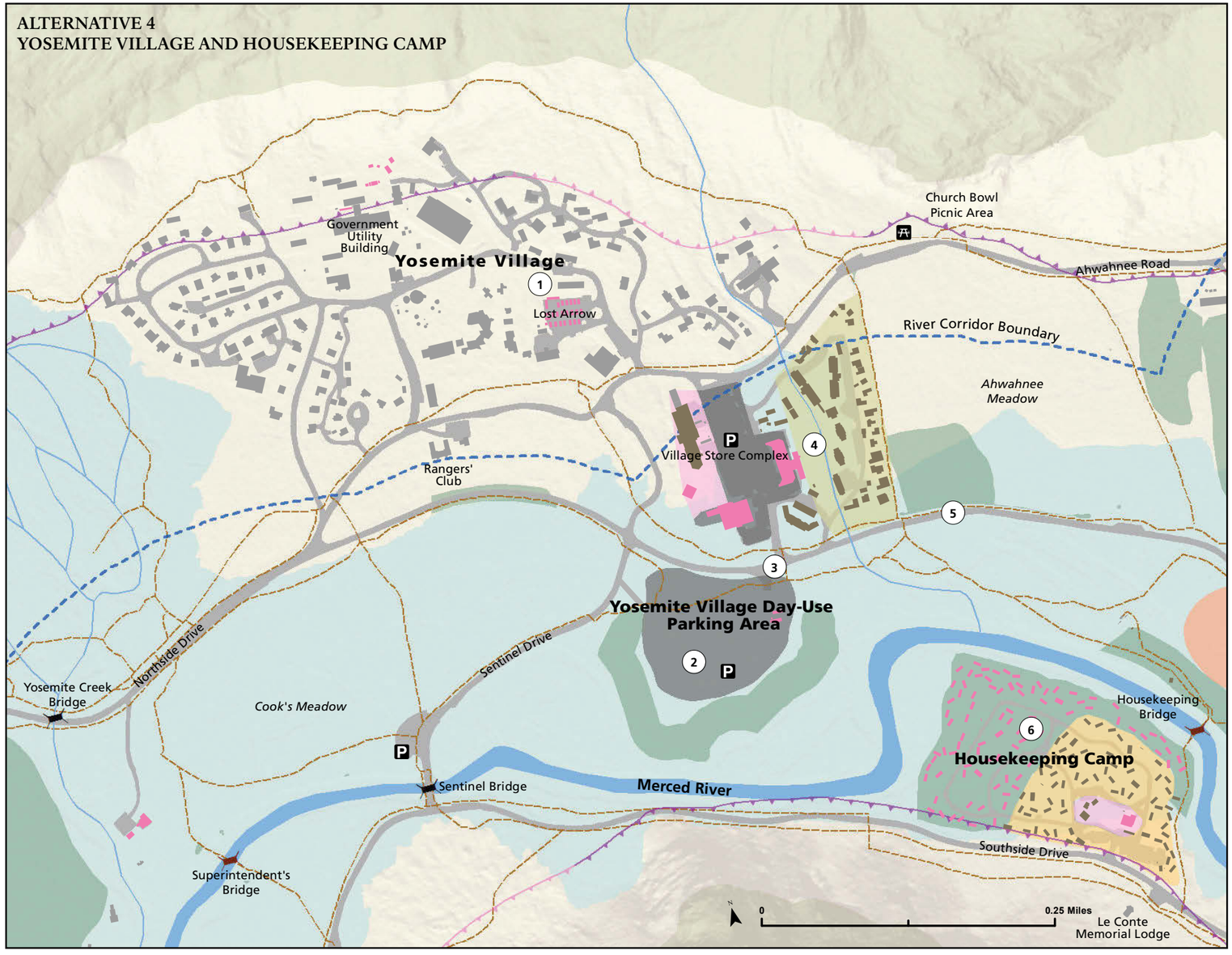
4. North Pines Campground Area
   - North Pines Campground: Retain 52 campsites. Remove 34 sites from within 150 feet of river. Designate a river access point at North Pines campground.
   - Backpackers Campground: Remove all 25 walk-in sites, of which 21 are within the 150-foot riparian buffer. Partially replace with 16 walk-in sites west of Backpackers Campground.
   - Conessioner Stables in Yosemite Valley: Remove and re-develop the stables area as a new 41-site drive-in campground. Remove associated employee housing (49 beds).

5. Lower Pines Campground Area
   - Campground Sites: Retain 61 campsites and remove 15 sites from within 150 feet of river.

6. Upper Pines Campground Area
   - Campground Sites: Retain 238 campsites. Remove two sites for sensitive resource concerns.
   - New RV Loop: Construct a new campground loop with 36 RV sites.
     New Walk-in Sites: Construct a new walk-in campground with 49 sites and 2 group camping sites.

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ALTERNATIVE 4: RESOURCED-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION



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- Scenic Segment

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Lost Arrow: Replace temporary employee housing with permanent housing units for 50 beds.

2. Yosemite Village Day-use Parking Area: Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate riparian restoration goals. Formalize this parking area, using best management practices to protect water quality, with a total of 750 parking places by re-developing part of the current administrative footprint as parking.

3. Traffic Congestion at Yosemite Village Day-use Parking Area: Re-align the intersection at Northside Drive and Village Drive to meet standards for a proper four-way intersection and improve performance. Add a three-way intersection at Sentinel Drive and the entrance to the day-use parking area to improve traffic flow and alleviate congestion at nearby intersections. Provide on-grade pedestrian crossings with proper sight lines to alleviate vehicle-pedestrian conflicts.

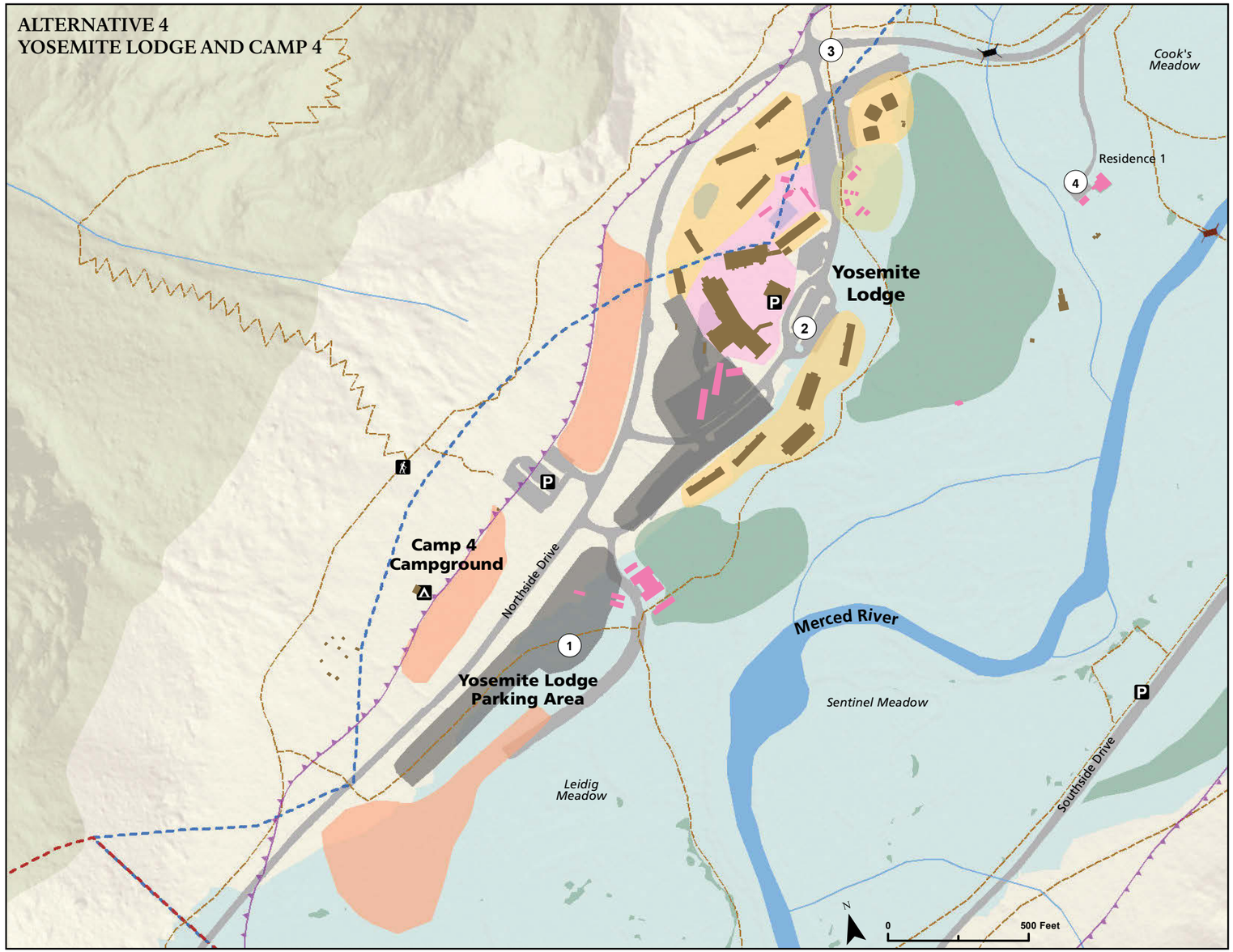
4. Concessioner Employee Housing: Create a 50-foot setback from Indian Creek. Ecologically restore the riparian habitat, and protect using restoration fencing. Retain Ahwahnee Row and Tecoya employee housing.

5. Ahwahnee Meadow Restoration: Retain Northside Drive and bike path, but increase culverts to improve hydrologic connectivity. Replace 350 feet of trail with a boardwalk to protect wetlands.

6. Housekeeping Camp Lodging: Retain 100 lodging units, and remove 166 lodging units (83 duplex lodging units, four restrooms, store and office) out of the ordinary high-water mark and in areas of frequent inundation. Retain Housekeeping Camp shower houses and laundry; reduce restrooms; and remove grocery store. Restore 12.2 acres of floodplain and riparian ecosystem.

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ALTERNATIVE 4: RESOURCED-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION



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EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

(1) West of Yosemite Lodge
- Parking: Construct additional 150 day-use parking spaces southwest of Yosemite Lodge. Formalize parking for 15 tour buses in this location. Parking redevelopment will incorporate best management practices to protect water quality.
- RV Camping: Construct 20 RVs sites adjacent to the new Yosemite Lodge parking area.

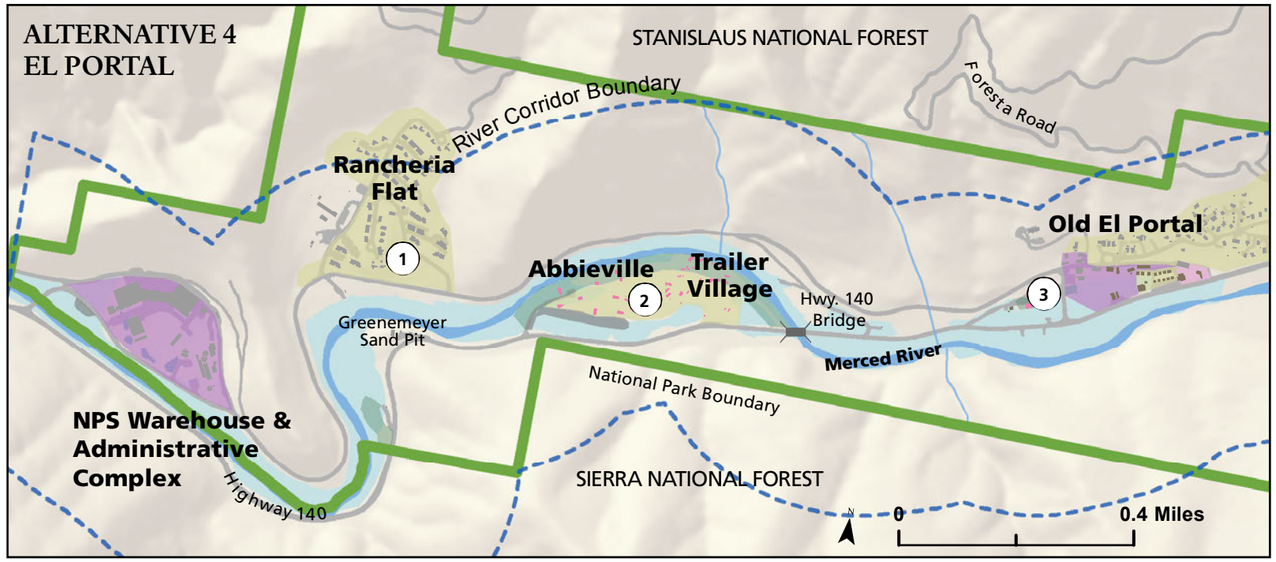
(2) Yosemite Lodge Area
- Ecological restoration: Restore riparian and floodplain ecosystem at the site of the former Yosemite Lodge units and cabins (those that were damaged by the 1997 flood and subsequently removed). Delineate a service road to the well house and parking. Remove non-native fill, decompact soils and plant riparian plant species (10.9 acres).
- Lodging: Retain the current 245 units at Yosemite Lodge.
- Services and Facilities: Retain Yosemite Lodge cafeteria and Mountain Room bar and dining service. Re-purpose convenience shop and nature shop. Relocate Yosemite Lodge maintenance. Remove Yosemite Lodge post office, swimming pool, bike rentals, snack stand, employee housing (called Thousands Cabins), Highland Court employee temporary housing, and the NPS Volunteer Office.
- Tour Buses: Remove temporary housing complex at Highland Court and establish a tour bus drop-off area with three bus loading spaces.
- Yosemite Lodge Day-Use Parking: Create 25 new parking spaces by re-designing parking near Northside Drive.
- Yosemite Lodge Concessioner Housing: Construct two new concessioner housing areas for 104 employees and construct 78 employee parking spaces. (Common to all alternatives is to remove housing at Highland Court and at the Thousands Cabins)

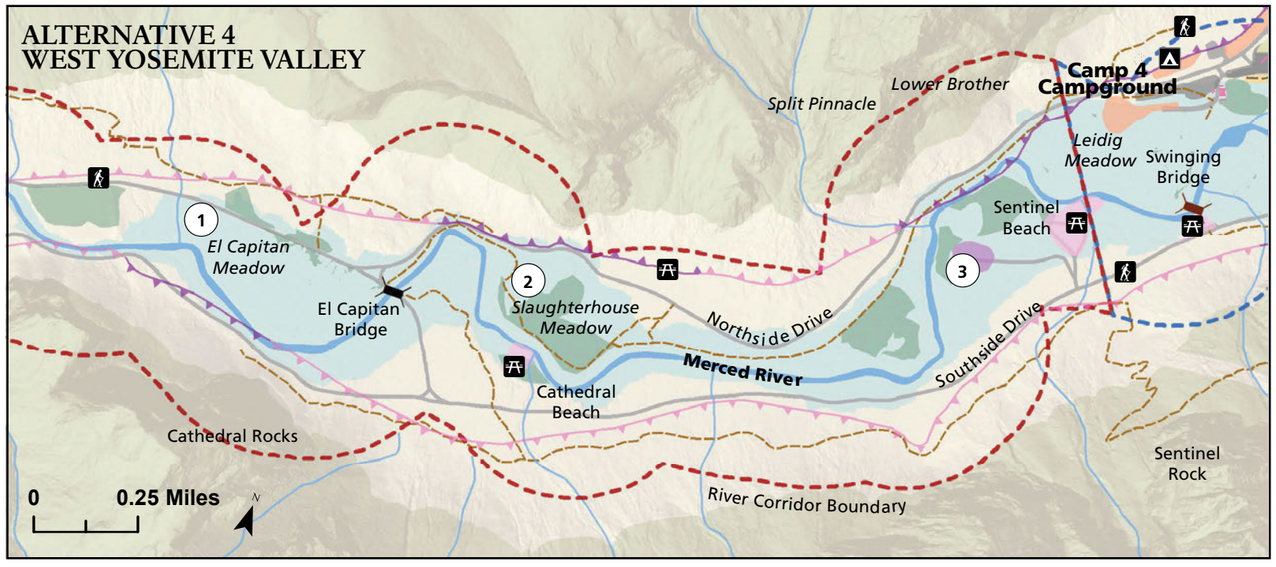
(3) Yosemite Falls Intersection
- Traffic Congestion: A tiered NEPA / NHPA compliance effort will evaluate a range of alternatives to address the pedestrian / vehicle conflicts and traffic congestion at this intersection. The grade-separated crossing that is selected will include design guidelines to ensure that archeological impacts are avoided or minimized, the safety of pedestrians is maximized, and visual impacts are minimized

(4) Residence 1
- Residence 1: Relocate the historic structure, also known as the Superintendent's House, to the NPS housing area and rehabilitate the building per the Secretary of Interior's Standards for the Treatment of Historic Properties and the Historic Structures Report. Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.

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ALTERNATIVE 4: RESOURCED-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION





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- Wild Segment
- Scenic Segment

EL PORTAL

1. Rancheria Flat
   - Employee Housing: To replace temporary housing units that will be removed from Yosemite Valley, construct eight dormitories, with 12 employees each, for a total of 96 employee beds, away from sensitive resources.

2. Abbieville and Trailer Village Area
   - El Portal Remote Visitor Parking: Construct a new visitor parking area with 200 spaces serviced by regional transit. Parking redevelopment will incorporate best management practices to protect water quality.
   - Abbieville and Trailer Village Housing: Remove or relocate 36 existing private residences. Continue to provide for housing land use for 40 employees and volunteers at this location. As homes within the 150-foot riparian buffer become vacant, ecologically restore these areas.

3. El Portal Village Center
   - Valley Oak Restoration: Restore the rare floodplain community of valley oaks in Old El Portal through implementation of best management practices. Create a valley oak recruitment area of 1 acre in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including the adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.
   - Odger's Fuel Storage Facility: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.

WEST YOSEMITE VALLEY

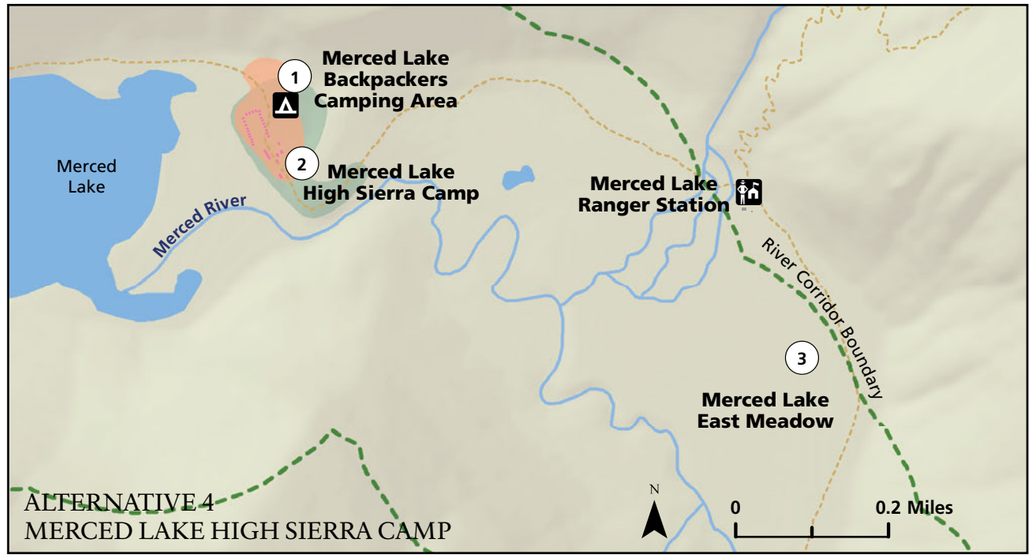
1. El Capitan Meadow Area
   - Restoration of Informal Trails: Remove all informal trails from the meadow that incise, promote habitat fragmentation, or are located in sensitive and frequently inundated areas, and restore to natural condition. Use restoration fencing along northern perimeter of meadow and designate appropriate access points using boardwalks and viewing platforms.

2. Valley Loop Trail
   - Re-Route: Move portions of the Valley Loop Trail out of sensitive areas; this includes the 420 feet of the trail through Bridalveil Meadow. Construct boardwalks through wet meadow habitat in Slaughterhouse Meadow.

3. Yellow Pine Campground
   - Administrative Use Campground: Retain Yellow Pine's four group sites (serving up to 120 people) for administrative use.

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ALTERNATIVE 4: RESOURCED-BASED VISITOR EXPERIENCES AND TARGETED RIVERBANK RESTORATION



MERCED LAKE HIGH SIERRA CAMP

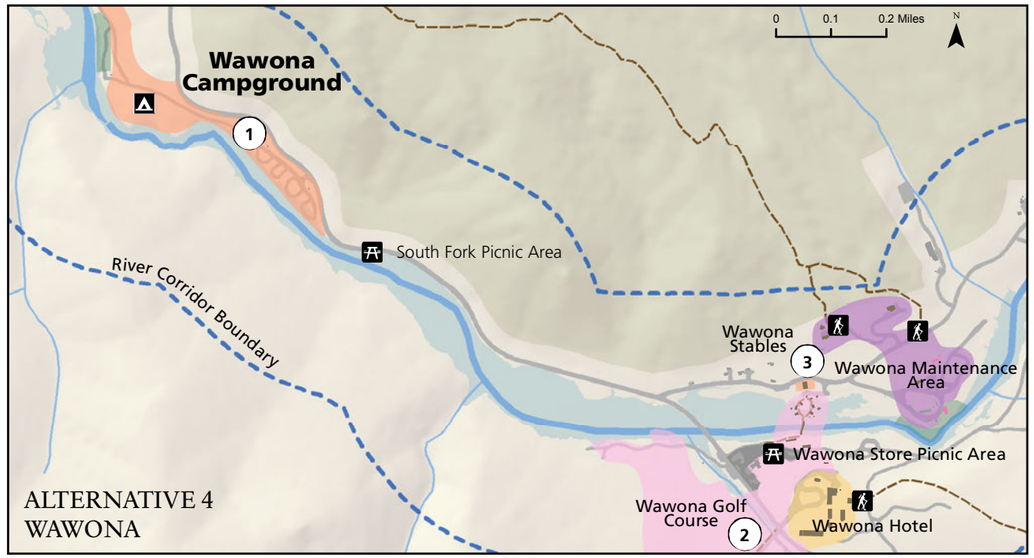
1. Merced Lake Backpackers Camping Area: Expand this designated camping area into the re-purposed Merced Lake High Sierra Camp area. Remove waste water system. Replace flush toilets with composting toilets.

2. Merced Lake High Sierra Camp: Remove lodging facility and all associated infrastructure, including buildings, water system, and septic system. Restore the area to natural conditions and convert the area to designated Wilderness.

3. Merced Lake East Meadow: Remove the meadow from grazing permanently. Require all administrative pack stock passing through area to carry pellet feed.

OTHER SEGMENT 1 CAMPING AREAS (NOT SHOWN ON MAP)

- Little Yosemite Valley: Decrease the designated camping area in this camping area. Retain infrastructure, such as composting toilets.
- Moraine Dome: Continue designated camping in this camping area.

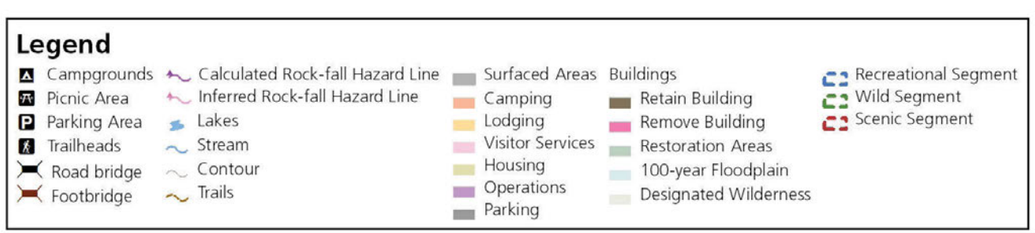


WAWONA

1. Wawona Campground: Retain 69 sites, and one group site. Remove 27 sites that are either within 150 feet of the river or in culturally sensitive areas.

2. Wawona Golf Course and Golf Shop: Retain nine-hole golf course and retail and food service at golf shop.

3. Wawona Stables: Eliminate stable operation and commercial day rides. Relocate two stock-use campground sites from sensitive resource area to existing stables area.



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Detailed Description of Alternative 4 by Segment

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 4 would include the following actions to protect and enhance river values:

Biological Values

- Discontinue administrative pack stock grazing at Merced Lake East Meadow. Administrative stock will carry pellet feed.

Recreational Values

- Enhance Wilderness character by removing the Merced Lake High Sierra Camp and converting this area to designated Wilderness.
- Retain designated camping areas at Little Yosemite Valley, Moraine Dome, and Merced Lake.
- Reduce crowding at Little Yosemite Valley by reducing the Wilderness zone capacity and trailhead quotas for trails leading to this location; reduce the size of the Little Yosemite Valley designated camping area.

User Capacity, Land Use and Facilities Management

Alternative 4 would reduce the amount of infrastructure in the river corridor for Segment 1. In addition to the "Actions Common to Alternatives 2-6". Alternative 4 would include the following actions to manage user capacity, land use and facilities:

Visitor Activities and Services

Designated camping areas retained in this alternative would include Little Yosemite Valley, Moraine Dome, and the Merced Lake Backpackers Camping Area.

Under Alternative 4, private boating would be allowed in Segment 1. Generally, this use would consist of short floats using inflatable rafts or other paddle craft that could be carried into this remote area. The use level would be regulated with a permit system managed as a supplement to the existing backcountry permit. Permits would allow use levels of up to five boats per day.

The Merced Lake High Sierra Camp and all associated infrastructure would be removed.

Under Alternative 4, the findings of the Determination of Extent Necessary (DEN) (Appendix L) would be implemented. Following is a summary of the commercial use permitted under the Determination of Extent Necessary (DEN):

- Allowance of up to two overnight commercial groups per Wilderness zone.
- No camping or travel allowed more than one-quarter mile from a maintained trail or public access road.

- All commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of three persons (including employees), only two pack animals are allowed (in addition to three riding stock).
- Additional seasonal and weekend restrictions would apply in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones as indicated in Appendix L.

Visitor Overnight Capacity

Overnight capacities for both Little Yosemite Valley and Merced Lake High Sierra Camp would be reduced (Table 8-29). Services would be managed as follows under Alternative 4:

- Remove the Merced Lake High Sierra Camp and all associated infrastructure. Convert the area to designated Wilderness.
- Expand the Merced Lake backpackers camping area into the footprint currently occupied by the Merced Lake High Sierra Camp, allowing more space for the campers in this area; retain the current zone capacity for this area.
- Decrease the zone capacity for the Little Yosemite Valley Wilderness Zone and retain the composting toilet. Manage to a capacity of 100 people per day in the Little Yosemite Valley Zone using a zone quota or zone pass-through system.
- Retain designated camping at Moraine Dome.

TABLE 8-29: WILDERNESS ZONE CAPACITIES – ALTERNATIVE 4

Wilderness Zones	Alt 4 Zonewide Capacity	Alt 4 Zone Capacity** Specific to the River Corridor
Little Yosemite Valley Zone	**100** people (-50 people*)	**100** people (-50 people*)
Merced Lake Zone	**50**	**50**
Washburn Lake Zone	**150**	**100**
Mount Lyell Zone	**50**	**10**
Clark Range Zone	**50**	**10**

NOTES:
* Number of people reduced from Alternative 1 (No Action) to Alternative 4
** For some Wilderness zones, only a small portion of river corridor that overlaps the zone. Therefore, the NPS calculated capacities that itemize the number of people in both the Wilderness zone and the river corridor portion of the zone. These calculations assume that visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Visitor Day-use Parking Capacity

Day-use access to this segment is addressed under "Actions Common to Alternatives 2-6" (beginning on page 8-47).

Administrative Activities

- Continue current administrative activities, which consist primarily of regular ranger patrols, backcountry utility work, and occasional trail/restoration work. These activities are seasonal and minimal in comparison to visitor use and would not affect overall user capacity.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 4 would include the following actions to protect and enhance river values:

Geological/Hydrological Values

- Retain Stoneman Bridge; mitigate the hydrological effects of the bridge by placing large wood on the riverbanks to address scouring, adding brush layering, and increasing channel complexity between Clark's Bridge and Sentinel Bridge (as described in Chapter 5 and Appendix E).
- Remove Sugar Pine and Ahwahnee bridges and associated berm/elevated trail connecting them; restore banks to natural conditions; reroute multi-use trail north along the river.

Water Quality

- Remove the Concessioner Stables in Yosemite Valley and the pack trail from the stable to Happy Isles; restore to natural conditions.

Biological Values

Alternative 4 would remove all campsites within 150 feet of the high-water mark:

- Remove all existing campsites and associated infrastructure within 150 feet of the ordinary high-water mark and restore natural floodplain and riparian habitat (12 acres).
  - **Backpackers Campground** – Remove all 25 sites, 21 of which are within 150 feet of the ordinary high-water mark. (Replace 16 sites to the west of the current campground, in less sensitive area out of the 100-year floodplain.)
  - **North Pines Campground** – Remove 34 sites from within 150 feet of the ordinary high-water mark; restore native riparian vegetation.
  - **Lower Pines Campground** – Remove 15 sites from within 150 feet of the ordinary high-water mark; restore native riparian vegetation.
- **Upper Pines Campground** – Retain 238 campsites, remove two sites for archeological resource concerns.
- **Former Lower and Upper River Campgrounds** – Remove abandoned facilities within 150 feet of the ordinary high-water mark and restore 19.7 acres of natural floodplain topography and riparian/wetland habitat; re-establish overflow channels where possible. Fence and close the riparian zone at the former Upper River Campground to protect the riverbank from trampling; direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach.
- **Yosemite Lodge** – Retain all lodging at Yosemite Lodge, including four structures within the 100-year floodplain.
- **Former Pine and Oak Units** – Restore 10.9 acres of riparian ecosystem at the site of the VIP Office and the former Yosemite Lodge units and cabins (those that were removed after the 1997 flood) and while maintaining access to the well house.
- **Yosemite Village** – Move the Yosemite Village Day-use Parking Area northward at least 150 feet

away from the ordinary high-water mark and outside a designated 50-foot setback from Indian Creek; remove fill material and restore the riparian habitat adjacent to the river.

- **Housekeeping Camp** – Remove lodging and other facilities at Housekeeping Camp that are seasonally inundated, 34 of which are within the ordinary high-water mark (remove 166 units); restore native riparian habitat (12.2 acres). Direct visitor use and river access to resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off the current eastern river access point located on a steep eroded bank and actively restore the riverbank with brush layering. Where infrastructure is removed, de-compact soils and plant riparian species.

Alternative 4 would enhance meadow connectivity by removing some roads and trails and mitigating the effects of others:

- **Bridalveil Meadow** – Re-route the 780-foot segment of the Valley Loop Trail (that crosses Bridalveil Meadow) closer to the base of the fill slope of the Valley Loop Road.
- **Slaughterhouse Meadow** – Re-route the Valley Loop Trail to an upland area out of wetlands.
- **El Capitan Meadow** – Fence the northern perimeter of the meadow to protect the restoration area; designate appropriate access points using boardwalks and viewing platforms.
- **Ahwahnee Meadow** – Retain Northside Drive and the bike path in their current configuration; add culverts to improve hydrologic connectivity through Ahwahnee Meadow. Install a boardwalk to traverse wet areas through Ahwahnee Meadow (350 feet in length).
- **Stoneman Meadow** – Remove the segment of Southside Drive that bisects Stoneman Meadow (1,335 feet); realign Southside Drive through Boys Town. Extend the boardwalk through wet areas to Curry Village (up to 275 feet).

Scenic Values

- Eliminate the visual intrusion of Southside Drive through Stoneman Meadow.

Cultural Values

- Remove two structures representing historic patterns of development in Yosemite Valley: Sugar Pine Bridge and Ahwahnee Bridge.
- Relocate Superintendent's House and Garage (Residence 1) to the NPS housing area and stabilize the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995).

Recreational Values

- Allow boating of up to 100 people per day for private vessels and 75 boats at one time for commercial vessels. This reduction in boats would enhance dispersed recreation along the river corridor.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Alternative 4 would protect river-related recreation through infrastructure improvements where necessary, while reducing recreational activities that are not resource-related. These reductions would be made to accommodate the ecological restoration and visitor experience objectives for this alternative. Alternative 4 includes the following changes to visitor activities and services in addition to those common to Alternatives 2-6.

- Allow both private and commercial boating in this river segment. Put-ins and take-outs would be limited, located below Clark's Bridge on river right, at Sentinel Beach, and at Cathedral Beach.
    - Restrict private boating to 100 trips per day through a permit system; monitor use to ensure protection of river values. Restrict private boats to the section of river between the Clark's Bridge and Cathedral Beach.
    - Allow commercial boating between Housekeeping Camp and Sentinel Beach, with staging at Housekeeping Camp. Limit commercial trips to 75 boats at one time (approximately 200 trips per day).
- Improve the Cathedral, Sentinel, and Swinging Bridge picnic areas.
- Convert some of the Housekeeping Camp lodging area into a day-use area with access to the river and picnicking facilities.
- Create opportunities for picnicking adjacent to some parking areas, such as Yosemite Village, Church Bowl, and Happy Isles.
- Reduce the Housekeeping Camp restrooms; retain shower houses and laundry; remove the grocery store.
- Eliminate commercial horseback day rides in Yosemite Valley, and replace the Concessioner Stables with a 41-site campground.
- Remove the Curry Village and Yosemite Lodge bike rental facilities.
- Remove the ice skating rink at Curry Village.
- Remove the swimming pools at the Ahwahnee Hotel and Yosemite Lodge.

Visitor Overnight Capacity: Camping

Camping would be increased in Yosemite Valley, while ensuring that this activity occurs in locations that are appropriate and protective of river values:

- **Backpackers Campground** – Remove all 25 sites, 21 of which are within 150 feet of the ordinary high-water mark. Construct 16 new walk-in campsites west of Backpackers Campground, in a less sensitive area out of the 100-year floodplain.
- **Upper River Campground** – Construct a new campground with 30 walk-in sites and two group sites, north of the river, a minimum of 150 feet away from the ordinary high-water mark.

- **Lower River Campground** – Construct a new campground with 40 walk-in sites, 150 feet away from the ordinary high-water mark.
- **North Pines Campground** – Retain 52 campsites. Remove 34 sites from within 150 feet of the ordinary high-water mark; restore native riparian communities.
- **Upper Pines Campground** – Retain 238 campsites, removing two sites for archeological resource concerns. Construct a new recreational vehicle campground loop with 36 RV sites. Construct a new walk-in campground with 49 individual sites and two group sites.
- **Lower Pines Campground** – Retain 61 campsites. Remove 15 sites from within 150 feet of the ordinary high-water mark.
- **New Campground near Yosemite Lodge** – Construct a new campground with 20 RV sites near the parking area west of Yosemite Lodge.
- **Camp 4** – Retain 35 walk-in campsites and 35 parking spaces. Construct 35 additional campsites east of Camp 4; establish a new parking area (41 spaces) for the expansion in the disturbed footprint of the former service station near Camp 4.
- **New Campgrounds near Curry Village** – Construct a new campground with 41 drive-in sites at the former site of the Concessioner Stables. Construct a new campground with 40 walk-in campsites at Boys Town; provide two parking spaces for each site (78 new spaces along the roadway and 12 new spaces along the eastern edge of the Curry Orchard Parking Area).
- **Yellow Pine** – Four group campsites (up to 120 people) would be retained at the Yellow Pine Campground.

Visitor Overnight Capacity: Lodging

Lodging would be reduced in order to meet the visitor experience and ecological restoration objectives for this alternative. Lodging would total 823 units accommodating up to 2,826 people per night. Common to Alternatives 2-6, the Ahwahnee Hotel would continue to provide 123 lodging rooms. The following additional lodging would be retained, removed, or constructed under Alternative 4:

- **Curry Village** – Retain 355 lodging units: 290 canvas tent cabins, 18 units at Stoneman House, and 47 hard-sided cabin-with-bath units. Remove all existing cabins and associated structures at Boys Town. Provide 300 designated overnight parking spaces at the Curry Orchard Parking Area; restore ecological conditions to part of the existing parking area (removing 50 spaces) to improve natural surface flows to Stoneman Meadow.
- **Housekeeping Camp** – Retain 100 lodging units, associated restrooms, shower houses, and laundry. Remove 166 lodging units (83 duplex lodging units, four restrooms, store, and office) that are seasonally inundated.
- **Yosemite Lodge** – Retain the existing 245 lodging units.

Preliminary site drawings for the Yosemite Village Day-use Parking Area, Curry Village, and Yosemite Lodge, as proposed in Alternative 5, have been completed to assess the feasibility of these projects. See "Conceptual Site Drawings" at the end of the Alternative 4 discussion for site details and design drawings.

Visitor Day-use Parking Capacity and Transit Options

Alternative 4 would reduce peak daily visitation to Yosemite Valley. Collectively, day parking, regional transit, and tour bus capacities would accommodate up to 7,554 people at one time in Segment 2, as listed below:

- Reduce available day-use parking spaces (- 492 spaces) to provide a total of 1,845 day-use parking spaces in Yosemite Valley. Additional parking for Yosemite Valley would be provided at a remote lot in El Portal (+200 spaces).
- Implement an East Yosemite Valley Day-use Parking Permit System to reduce crowding at key attraction sites, along roadways, and in parking lots and other facilities.
- Retain tour bus parking at 15 spaces.

Traffic circulation would be improved to reduce automobile congestion and to improve the visitor experience. Major actions would include the following:

- Redesign day-use parking at Yosemite Village to provide 750 designated parking spaces and a new comfort station. Realign the intersection at Northside Drive and Village Drive to improve intersection performance. Provide on-grade pedestrian crossings with proper sight lines to address traffic congestion associated with vehicle-pedestrian conflicts.
- Construct a parking lot with 150 designated day-use parking spaces and a new 3,000-square-foot comfort station west of Yosemite Lodge; provide 15 bus loading/unloading spaces.
- Determine the type and location of a new grade-separated pedestrian crossing near Yosemite Falls location through a tiered NEPA/NHPA compliance effort.
- Day users would also be able to access Yosemite Valley by parking in the new El Portal remote parking area (200 parking spaces) and taking a shuttle to the Valley.

Due to the reductions in the day-use parking supply in this alternative (as compared to current peak demand), an East Yosemite Valley day-use parking reservation system would be required. The majority of day-use parking spaces would be reserved, with a small number being made available for more spontaneous users (to be distributed on-site along with spaces available from cancellations and no-shows). A reservation system is needed for this alternative, as demand for day-use visitation is expected to be high relative to the available capacity and continual East Valley traffic diversions are likely to be inadequate to handle the disparity (displacing East Valley crowding to other parts of the park on a regular basis). Although details of the system will require additional planning, general characteristics may include:

- **Seasonality** – The system would like apply through the entire high use season, which can begin as early as mid-April and continue through October.
- **Daily hours** – The system would apply to day-use parking in East Valley from 10 A.M. to 5 P.M. (periods of potential day-use crowding and congestion). Day-use visitors who arrive at parking areas before 10 A.M. or after 5 P.M. would not need a pass.
- **Primary allocation mechanism** – Reservations would be made through an online system. In-person reservations could also be made at entrance stations and visitor centers.
- **Secondary allocation mechanism** – Cancelled reservations and no-shows would be filled at entrance gates or visitor centers after a certain hour of the day. Late arrivals would not be guaranteed a space in the day-use lots.

- **Timing of availability** – Approximately 80% of total spaces would be made available for reservations at intervals of six months (20%), three months (20%), one month (20%), and one week (20%) before a given date. Twenty percent would remain in the secondary system for spontaneous use (along with cancellations and no shows). The online reservations system would continually track cancellations and make those available.
- **Compliance** – Parking passes would need to be shown when visitors arrive at entrance gates, and displayed when using the day-use lots or parking for more than one hour at trailheads or roadside viewing areas. Visitors without passes could obtain passes at entrance stations (if they are available) or would be welcome to travel to other parts of the park; they would not be allowed to use day- or overnight-use parking areas in East Valley.
- **Fees** – An administrative fee may be collected with reservations.
- **Combining Parking Fees with Park Entrance Fees** – The NPS would explore options to pay park entrance fees when making parking pass reservations. This concept would allow visitors to enter a faster lane at entrance gates (because they would only have to show previous payment).
- **Overnight visitor parking passes** – Visitors with overnight reservations would receive a parking pass for their vehicles. These visitors could park in overnight visitor lots, campgrounds, or for longer than one hour at trailheads and roadside viewing areas. They would not be allowed to park in East Valley day-use lots.

Regional transit service would expand and shuttle bus service would be improved, as shown in Table 8-30.

TABLE 8-30: TRANSIT OPTIONS – ALTERNATIVE 4

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	8 runs per day (4 from Merced; 4 from Mariposa) (year-round)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	4 runs per day
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	2 runs per day (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	1 run per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	5 minute peak interval between buses (year-round except Visitor Center direct)
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	15 minute interval between buses (summer only)
El Capitan Crossover	30 minute interval between buses (summer only)
West Yosemite Valley	Expand Valley Shuttle service to Bridalveil (summer only) 60 minute interval between buses and stops at El Capitan picnic area, El Capitan Meadow, Bridalveil Fall straight, Cathedral Beach, Yellow Pine, and Four-mile/ Swinging Bridge.
NOTE: *All Regional Transit runs are round trip.	

Administrative Activities

Some administrative activities would be relocated:

- Move the Yosemite Lodge housekeeping and maintenance facilities to a location behind the Yosemite Lodge food service building.

Employee Housing and Employee Parking

Compared to existing conditions, 228 fewer concessioner employees would be housed in Yosemite Valley. The remaining housing for 923 concessioner employees would be provided as follows:

- Retain housing for 42 employees at the Ahwahnee Hotel.
- Provide housing for 387 employees at Curry Village.
  - Retain permanent housing in the Curry Village residential area (223 employees).
  - Remove employee housing at Concessioner Stables in Yosemite Valley (49 beds).
  - Construct 16 dormitory buildings housing 164 employees.
- Provide housing for 390 employees at Yosemite Village:
  - Retain permanent housing at Indian Creek and Upper Tecoya (28 employees).
  - Retain Ahwahnee Row, Y Apartments, garage housing, and Hospital Row (43 employees).
  - Retain Tecoya Dorms (232 employees).
  - Remove the temporary housing units (pre-fabricated units and trailers) that occupy the Lost Arrow parking lot (outside the river corridor). Construct two new dormitories in this location and retain the existing Lost Arrow dorm (150 employee beds in total).
- Provide housing for 104 employees at Yosemite Lodge:
  - Remove modular structures currently serving as temporary housing in the Highland Court parking area (82 beds).
  - Construct new housing for 104 employees at Yosemite Lodge (two structures with 26 double-occupancy units each).

In this alternative, 955 parking spaces would be allocated for administrative uses (including parking spaces near residential areas).

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 3 for Alternative 4 are included in "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

This alternative would provide the same kinds and amounts of use available today. The majority of actions for Alternative 4 in Segment 3 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Under Alternative 4, only private boats would be allowed in Segment 3. It is expected that the water craft used in this segment would be kayaks. Boaters would be allowed on the river below Pohono Bridge (in Segment 2) and to run the river into El Portal (Segment 4). Boaters would be allowed to put in and take out at any of the roadside pull-outs. This use would be managed by a permit system and restricted to 10 boats per day.

Transit Options

Public transit options along this segment would be expanded as described in the Yosemite Valley segment (see "Segment 2- Transit Options", above).

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 4 for Alternative 4 are addressed in "Actions Common to Alternatives 2-6" (see page 8-47).

User Capacity, Land Use and Facilities Management

User capacity in this segment would primarily be affected by the amount of employee housing provided at El Portal. While all new units would be built outside of the 100-year floodplain, most would be located within the river corridor.

Visitor Activities and Services

Most visitor activities and services in Segment 4 are addressed in "Actions Common to Alternatives 2-6". Additional actions unique to this alternative are listed below.

- Private boats would be allowed in Segment 4. Anticipated use would be rafts and kayaks. Boaters would be allowed to paddle the stretch of river from below Yosemite View Lodge to beyond the Foresta Bridge (at which point boaters would enter river reaches managed by the U.S. Forest Service). Boaters would be able to use put-ins and take-outs west of the hotel, at the store/gas station, and at the Red Bud launch site. This use would be regulated through a permitting system to allow up to 10 boats per day.

Visitor Overnight Use

No visitor overnight accommodations are proposed on NPS lands in this alternative.

Visitor Day-Use Capacity

Visitor day-use parking would be expanded in Segment 4 to provide a total of 414 spaces. A new remote visitor day-use parking area accommodating a maximum of 200 vehicles would be provided in El Portal at the Abbieville site. This parking area would primarily be used for visitor access to Yosemite Valley. The use associated with this parking area is factored into the Valley daily visitation levels reported above (see "Visitor Day-use Parking – Segment 2," above).

The total available day-use parking capacity in this segment would be 414 spaces. Roughly half (214) of these spaces would be for visitors to El Portal (accommodating 740 people at one time) and 200 remote parking spaces would be for visitors to Yosemite Valley.

Administrative Activities

All administrative activities in Segment 4 are considered in "Actions Common to Alternatives 2-6" (see page 8-47).

Employee Housing Capacity

In Alternative 4, higher-density employee housing would be added to the El Portal Village Center (12 beds) at Rancheria Flat (96 beds). All new units would be located outside of the 100-year floodplain. These units would be added to replace concessions housing removed from Yosemite Valley. The total housing capacity for El Portal would be 300 people.

Employee and Administrative Parking Capacity

Most employee and administrative parking actions are discussed in "Actions Common to Alternatives 2-6" (see page 8-47). New employee overnight parking spaces would be included with the housing units to be built at El Portal Village Center and Rancheria Flat.

Transit Options

Regional transit options would maintain existing service along the Highway 140 (El Portal Road) corridor. For a complete summary of the transit activity that passes through this segment, see the "Segment 2- Transit Options" section, above.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in proposed in Alternative 4 that are specific to this segment.

User Capacity, Land Use and Facilities Management

Alternative 4 would provide the same kinds and amounts of use available today in Segment 5. The majority of actions in Segment 5 are included in "Actions Common to Alternatives 2-6". Actions unique to this alternative are described below.

Visitor Activities and Services

Under Alternative 4, private boating would be allowed in Segment 5. Use in this segment would consist of short floats using inflatable rafts or other paddle craft that could easily be carried into this remote area. Only five boats per day would be allowed, and a permit would be required. The boating permits would be issued in conjunction with overnight backcountry permits.

Transit Options

Specific transportation options for reaching Segment 5 trailheads are listed below under Segment 7.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (see page 8-47), protection and enhancement of cultural values and water quality would be accomplished through the actions described below.

Cultural Values/Water Quality

- Stock campground: Two stock campsites would be relocated away from a culturally sensitive area to the site of the Wawona Commercial Stables.
- Wawona Campground: Remove 27 sites that are either within 150 feet of the river or in culturally sensitive areas.

User Capacity, Land Use and Facilities Management

This alternative would provide the same kinds and amounts of use available today. The majority of actions for Alternative 4 in Segment 7 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Most visitor activities and services in Segment 7 are considered in "Actions Common to Alternatives 2-6" see page 8-47) Additional actions are listed below.

- **Golfing** – Retain the Wawona Golf Course.
- **Tennis** – Retain the Wawona Hotel Tennis Court.
- **Wawona Commercial Stables** – Discontinue commercial horseback day rides and remove the Wawona stables; repurpose the stables area as a stock use campground.
- **Boating** – Allow only private boating in Segment 7. Expected use would be kayaks and other small whitewater boats. Boating would be permitted from below Wawona's Swinging Bridge to beyond the park boundary, with the exception of the Wawona impoundment where boating is prohibited. Boaters would be able to use put-ins and take-outs at Swinging Bridge, the Wawona Store area, South Fork Picnic Area, and below the campground. This use would be regulated through a permit and monitoring system that would restrict use to five boats per day.

Visitor Overnight Capacity

- The overnight capacity for Segment 7 would be 176 units accommodating up to 703 people per night.
- The Wawona Campground would be reduced in size to 70 sites (444 people per night). This includes one group camping site (to accommodate up to 30 persons).
- Two stock campsites would be relocated to the Wawona stables and would accommodate 6 people per night each (12 people per night total).

Transit Options

- Tour bus parking would be provided in the parking area at the Wawona Store. In-park shuttle options between Wawona and Yosemite Valley would continue. New regional transit options would be provided along the Highway 41 (Wawona Road) corridor, with four runs between Fresno/Oakhurst and Yosemite Valley.

Segment 8: South Fork Merced River below Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in Alternative 4 proposed for this segment.

User Capacity, Land Use and Facilities Management

Alternative 4 would provide kinds and amounts of use similar to those that exist today in Segment 8; significant changes are not proposed. The majority of actions for Alternative 4 in Segment 8 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Private boating would be allowed in Segment 8. Use in this segment would consist of short floats on inflatable rafts or other paddle craft, and pass-through trips by experienced kayakers. Up to five boats per day would be allowed, and a permit would be required. The boating permits would be issued in conjuction with overnight backcountry permits.

Transit Options

Transit services for access to this segment are described above under Segment 7.

Conceptual Site Drawings

Boys Town

In Alternative 4, Southside Drive would be removed from Stoneman Meadow and visitor traffic re-routed through Curry Village. The existing Boys Town cabins and facilities would be removed and replaced with 40 walk-in campsites. 78 parking spaces would be added for walk-in campers along a new roadway connecting Curry Village and the campgrounds, and 12 parking spaces would be added to the eastern edge of the Curry Orchard Parking Area. A new pedestrian walkway and a comfort station with showers would be constructed within the existing use area. The Campground Reservation Center would be relocated to a more accessible location, closer to East Valley campgrounds. The Curry Orchard Parking Area would be partially restored to facilitate Stoneman Meadow restoration, while retaining approximately 300 parking spaces. The project area would encompass 8.4 acres and would include: approximately 4,000 square feet for new buildings; 2,000 square feet of utility trenching; 153,860 square feet for the new camping area; 4,300 square feet for a plaza and pedestrian pathways around the comfort station; and 27,000 square feet of new parking, for a total

of 4.4 acres. Temporary construction staging would require approximately 1.4 acres and would likely take place within the existing Curry Orchard Parking Area.

Yosemite Village Day-use Parking Area

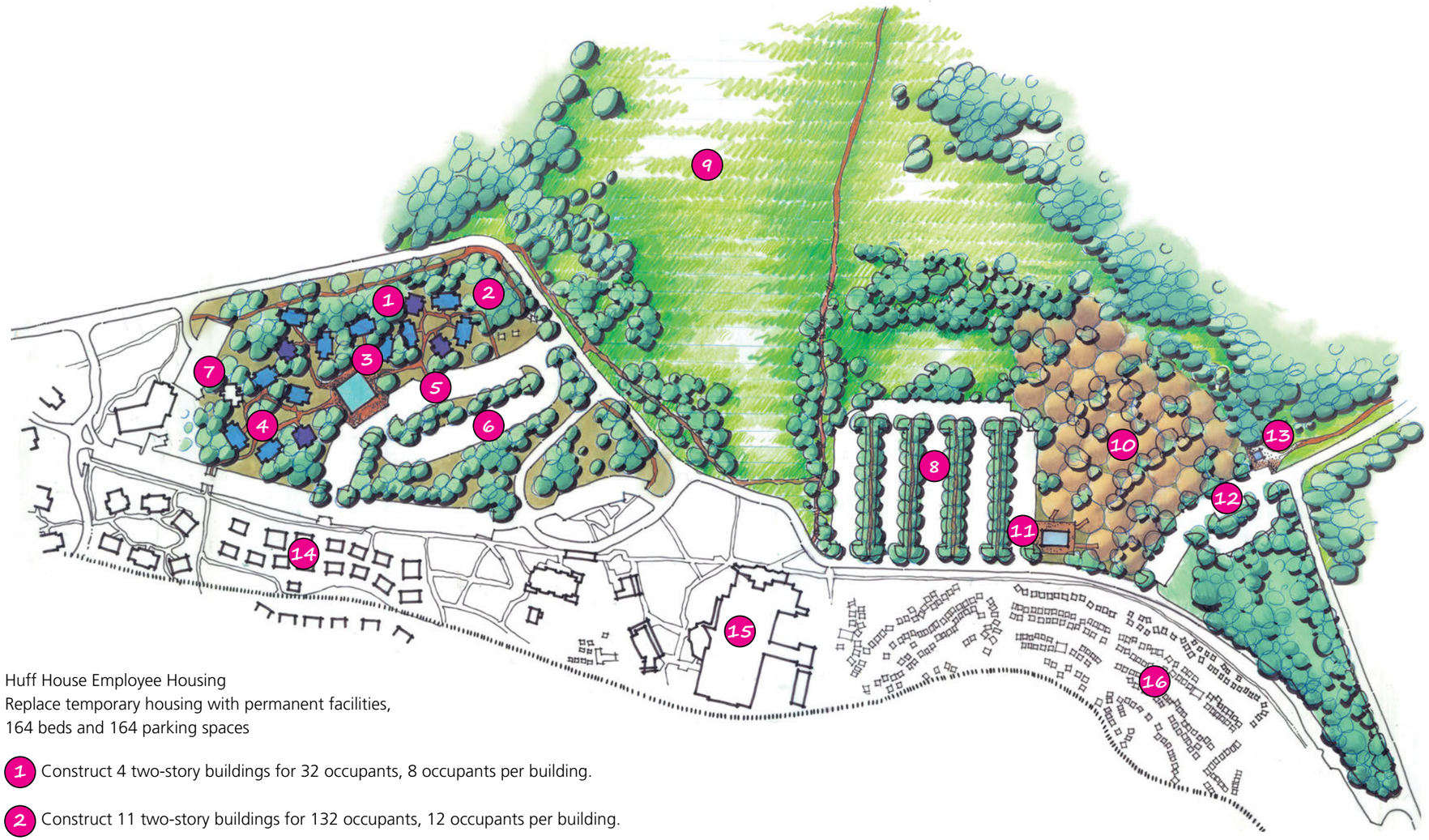
In Alternative 4, the 12-acre Yosemite Village Parking Area at Camp 6 would be moved northward 150 feet away from the river to facilitate riparian restoration goals and to prevent riparian resource damage. Restoration actions would remove non-native fill material, re-contour the topography, and plant native vegetation. The redesigned parking area would be formalized to provide a total of 750 parking spaces and a new comfort station. The intersection would be realigned at Northside Drive and Village Drive to address traffic flow on peak days. The Concessioner General Office and Garage and the Art Activity Center (former bank building) would be removed, and the Village Sport Shop repurposed to a visitor contact station.

The project area for improvements at the Yosemite Village Day-use Parking Area in Alternative 4 would cover approximately 27.5 acres, most of which is currently developed, and would include: 1.1 acres for existing building removal; 4,000 square feet for the new comfort station; 5.4 acres of pavement removal; 2.2 acres of new roadway; 5.1 acres for new parking; 15,220 square feet of utility service trenching; and 43,350 square feet for new pedestrian pathways. Temporary construction staging would cover approximately two acres.

Yosemite Lodge

In Alternative 4, the former annex area (west of Yosemite Lodge) would be redeveloped to provide: 150 day-use parking spaces, designated campsites for 20 RVs, parking for 15 buses, a new 3,000 square foot comfort station, and a re-located shuttle stop. The existing tour bus drop-off area would be relocated to the Highland Court area. The abandoned concessioner employee wellness center and linen storage and laundry buildings would be removed. Linen storage and laundry would be replaced by an addition to the food service building. The project area for improvements at Yosemite Lodge in Alternative 4 would cover approximately 27.5 acres, most of which is currently developed, and would include: 55,850 square feet of existing building and pavement removal; 3,000 square feet for the new comfort station and shuttle stop; 13,300 square feet of utility service trenching; 2.5 acres for parking; and 2,500 square feet for pedestrian pathways. Temporary construction staging would occur over a two-acre area within the existing footprint. Existing vegetation would be retained to separate and screen parking bays, while bioswales would serve to filter and treat storm water run-off.

Also in Alternative 4, the temporary modular housing at Highland Court and the Thousands Cabins would be removed and replaced with two new buildings housing 104 concessioner employees. 78 employee parking spaces would be provided, along with short-term parking for 3 shuttle buses and 53 day-use parking spaces for the public. The two housing sites would cover a total of 7.4 acres, most of which is currently developed and would include: 45,500 square feet of preparation for the new buildings; 5,500 square feet of utility service trenching; and 1.8 acres for parking.



Huff House Employee Housing
Replace temporary housing with permanent facilities,
164 beds and 164 parking spaces

1. Construct 4 two-story buildings for 32 occupants, 8 occupants per building.
2. Construct 11 two-story buildings for 132 occupants, 12 occupants per building.
3. Provide common recreational area, approximately 3,600 square feet.
4. Build plaza areas and walkways with site furnishings, accent paving, and enhanced landscaping.
5. Construct a shuttle bus stop.
6. Remove ice rink and bicycle rentals. Construct an employee parking facility with 164 spaces.
7. Retain historic residence for housing purposes.

Curry Orchard Parking Area

8. Improve parking facility with 300 spaces and landscape buffers with trees and bioswales that will treat storm water run-off. Provide pedestrian walkways.

Stoneman Meadow Restoration

9. Remove Stoneman Road and adjacent recreation trail. Extend boardwalk from existing terminus (at Stoneman Road) to Curry Village Pavilion area. Improve hydrology, remove invasive species, promote weed control and plant native species.

Boys Town

10. Replace existing guest accommodations with a walk-in campground consisting of 40 sites.
11. Construct restroom with showers.
12. Construct a roadway to connect Curry Village and East Valley campgrounds. Provide additional roadside parking.
13. Relocate Campground Reservation Center and provide 8 parking spaces.

Existing Curry Village Visitor Services

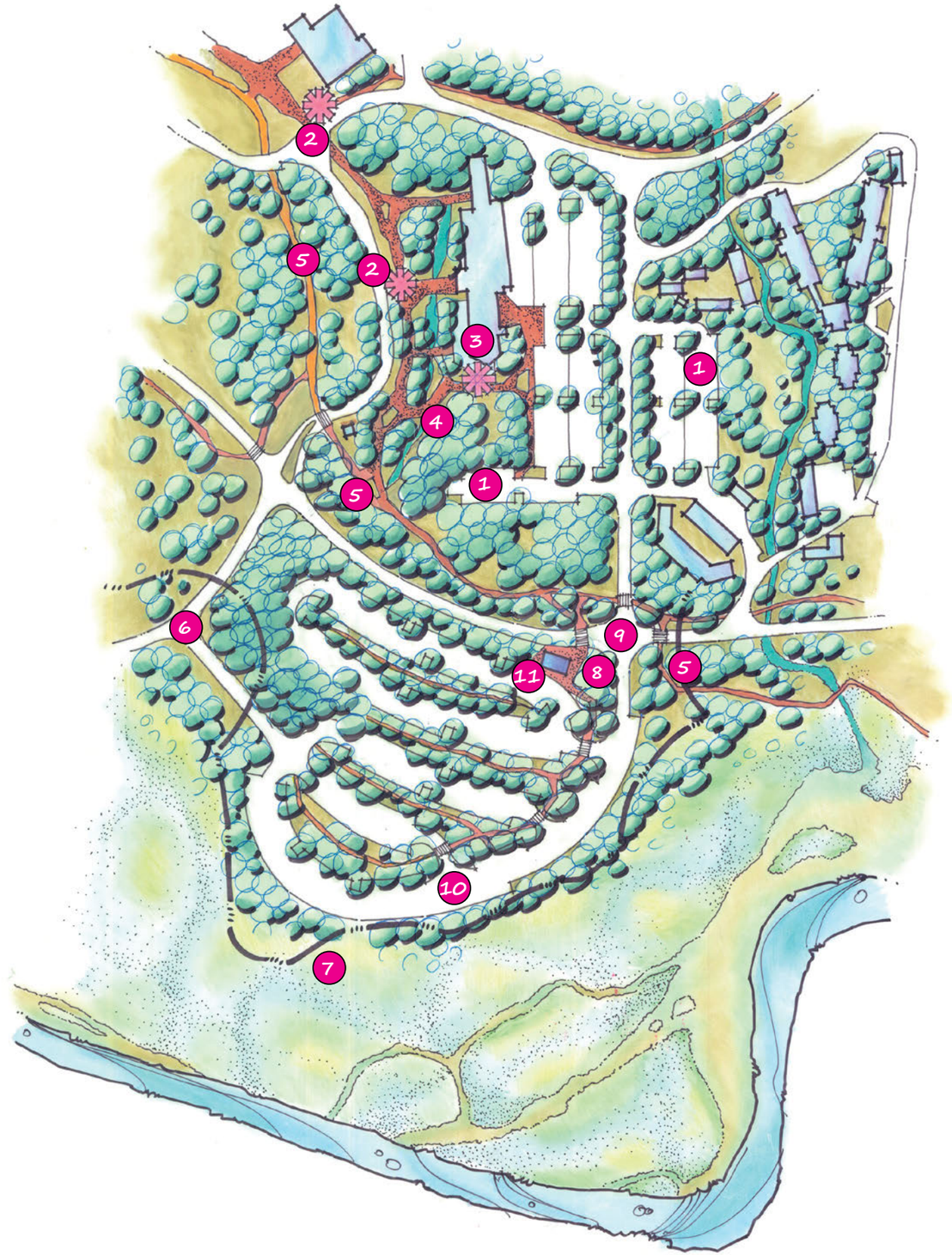
14. Retain existing historic cabins and Stoneman Cottage (65 lodging units).
15. Retain existing Curry Pavilion.
16. Retain 290 tents.

NORTH

Alternative 4
Conceptual Site Drawing for Curry Village
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Eliminate Concessioner General Office and Garage between the Village Store and Ahwahnee Meadow, providing more space for visitor parking.

2. Retain shuttle stops on Visitor Center Loop Drive.

3. Replace Village Sport Shop with visitor contact station.

4. Eliminate art activity center and improve pedestrian access.

5. Improve pedestrian connections and bike paths east and west of the day-use parking area.

6. Provide a two-way access driveway from Sentinel Drive as the primary entrance to the day-use parking area.

7. Redesign the day-use parking area to provide a 150-foot buffer from the river. Restore wetlands and meadow.

8. Create pedestrian pathways to lead visitors into the Yosemite Village mall. Construct a comfort station in a central location connected to the main pedestrian concourse.

9. Remove offset intersection and re-align day-use parking area driveway as a conventional four-way intersection at Village Drive and Northside Drive. Shift pedestrian crosswalk on Northside Drive from the east to the west side of this intersection.

10. Provide 750 day-use parking spaces. Design planters to retain large numbers of trees, including bioswales that eliminate pollutants from parking area. Create pedestrian pathways with a wayfinding system leading visitors to the Yosemite Village mall.

11. Relocate shuttle bus pick-up and drop-off area. Replace comfort station.

NORTH

Alternative 4
Conceptual Site Drawing for Yosemite Village Day-use Parking Area
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Re-align Yosemite Lodge intersection within the limits of existing developed areas.

2. Maintain all existing Yosemite Lodge buildings and parking areas.

3. Enhance pedestrian circulation system.

4. Construct tour bus loading and unloading area, with shelter.

5. Construct employee housing in 2 two-story buildings with 52 occupants per building and 39 employee parking spaces per building.

6. Relocate linen storage and laundry buildings from the 100-year floodplain to an addition to the food service building. Reconfigure truck loading and unloading area. Demolish and remove existing NPS volunteer office.

7. Reconstruct a section of the Yosemite Lodge entrance road as a promenade with a 5% slope to a pedestrian underpass. Install accent paving, landscaping, wayfinding and site furnishings, low-voltage site lighting consistent with design features of the Yosemite Falls trail.

8. Construct 150 visitor parking spaces at Yosemite Lodge Day-use Parking Area. Maintain existing vegetation as buffers to separate and screen parking bays, provide pedestrian pathways and bioswales that will treat storm water run-off.

9. Construct 15 tour bus parking spaces.

10. Construct a shuttle bus stop with shelter and comfort station.

11. Construct 41 additional parking spaces at Camp 4.

12. Retain 35 existing walk-in campsites at Camp 4. Construct 35 additional walk-in sites opposite existing parking facility. Occupancy is limited to 6 campers per site. Standard walk-in campsite is 3,850 square feet (70-foot diameter), including 1,200 square feet of clearance with a 15-foot perimeter buffer.

13. Protect and enhance a 150-foot riparian buffer.

14. Construct an RV loop with 20 campsites.

NORTH

Alternative 4
Conceptual Site Drawing for Yosemite Lodge and Camp 4
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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ALTERNATIVE 5 (PREFERRED ALTERNATIVE): ENHANCED VISITOR EXPERIENCE AND ESSENTIAL RIVERBANK RESTORATION

Overview

The guiding principles of Alternative 5 (Preferred) would include restoring natural conditions to riparian areas and meadows, modifying components of the transportation system to improve the visitor experience in Yosemite Valley, and reducing or eliminating unnecessary facilities and services in the river corridor.

Management actions in Alternative 5 (Preferred) would:

- Restore 189 acres of meadow and riparian habitat.
- Significantly increase the campsite inventory in all river segments (+36%) and in Yosemite Valley (+37%).
- Slightly increase available lodging corridorwide (+3%) and in Yosemite Valley (+5%).
- Increase parking for Yosemite Valley day use (+8%).
- Reduce some commercial services and move others to locations outside of the river corridor.
- Make significant changes to the traffic circulation pattern in Yosemite Valley to accommodate ecological restoration goals while reducing traffic congestion.
- Establish a user capacity of 18,710 people at one time for Yosemite Valley, with peak visitation estimated at 20,100 visitors per day.
- Manage user capacity for East Yosemite Valley by rerouting traffic at the El Capitan Traffic Diversion prior to reaching established limits.
- Continue to manage overnight-use capacity through Wilderness permits and reservation systems for lodging and camping.

Under Alternative 5 (Preferred), visitors to Yosemite Valley would see marked improvements in circulation, parking availability, and traffic flow. Coupled with enhancements to meadows, improvements to river access, and extensive riverbank restoration, the visitor experience would be significantly improved. Visitors to Yosemite Village would experience an enhanced "sense of arrival" to the heart of Yosemite Valley, as the primary day-use parking area would be fully integrated with pathways to visitor services, restrooms, and food service. Recreational activities, such as rafting, bicycling, and ice skating would continue, with rental facilities and services provided at locations outside the river corridor. With watercraft allowed on eight miles of the Merced River in Yosemite Valley, boaters would be able to float new and challenging reaches of water framed by views of El Capitan and Half Dome. Valley stables would be active, servicing the High Sierra camp and supporting NPS administrative activities. Private horseback riding would continue in Yosemite Valley and further into the high country.

Families would enjoy expanded camping opportunities in East Yosemite Valley, with new walk-in campsites provided east of Camp 4, at Upper Pines, and at the location of the former Upper and Lower River campgrounds. Drive-in campsites (including some RV sites) would be included in the new development at Upper Pines and Lower River (adjacent to the road), and would be provided at El Portal. Housekeeping Camp would continue to offer an alternative to camping, with improved access to the nearby beach and picnicking area.

The visual distraction caused by substandard temporary housing at Curry Village would be eliminated. Similar improvements would be noticed at Yosemite Lodge, with the replacement of temporary modular housing with permanent, code-complaint housing. Redundant services, such as the Village Sports Shop, the Lodge Nature Shop, and the Yosemite Lodge post office would be eliminated and replaced with visitor information and interpretive functions. Overall, the visitor would discover a less cluttered and confused Yosemite Valley experience with ample opportunity to enjoy the river and its values without diminishing their quality.

Under Alternative 5 (Preferred), West Yosemite Valley would retain its overall natural character with limited facilities and services provided. This peaceful setting would continue to serve as a destination for low-impact recreational activities such as hiking, rock climbing, photography, and wildlife viewing.

Backcountry enthusiasts traveling through the Merced River corridor would find designated camping at Little Yosemite Valley, Moraine Dome, and Merced Lake. Visitors to Yosemite Wilderness would have the option of staying at a smaller Merced Lake High Sierra camp, continuing on to other High Sierra Camps, or exiting to the Valley.

Visitors to Wawona would continue to enjoy the historic Wawona Hotel, swimming pool and tennis courts. Recreational activities would include camping, commercial horseback day rides from the Wawona stables, golfing, swimming, picnicking, and boating the South Fork Merced.

Actions to Protect and Enhance River Values

Alternative 5 (Preferred) would protect and enhance river values through essential ecological restoration of riverbanks and riparian and meadow habitat. Targeted infrastructure within the bed and banks of the river would be removed, along with campsites and associated infrastructure within 100 feet of the river; these areas would be ecologically restored. This alternative would also establish a Valley Oak habitat protection area in El Portal. Further study would be conducted to assess the alluvial processes of the river and determine the appropriate treatment for Sugar Pine Bridge. The connection between meadows and the riparian floodplain would be enhanced through engineering and design treatments, including the installation of large box culverts and permeable subgrades to improve surface water flow.

Cultural and scenic values would be protected and enhanced as described under "Actions Common to Alternatives 2-6." Recreational values would also be protected and enhanced by dispersing recreational boating along the river through Yosemite Valley and by reducing traffic congestion. Table 8-31 provides a summary of the actions unique to Alternative 5 (Preferred) that would protect and enhance river values.

TABLE 8-31: ADDITIONAL ACTIONS TO PROTECT AND ENHANCE RIVER VALUES, ALTERNATIVE 5 (PREFERRED)

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	189 acres: 176 acres (common to all) plus an additional 13 acres (refer to Appendix E for specific locations)
Riprap to be Removed	6,048 linear feet: 5,700 linear feet (common to all) plus an additional 348 feet to be bioengineered (refer to Appendix E for specific locations)
Segment 2: Yosemite Valley	
Free Flow /Geological/ Hydrological Values	▪ Retain all historic bridges, including Sugar Pine Bridge, for the near-term. Additional study will be conducted by a third party to determine the hydrologic impacts of the historic bridges. Develop criteria for bridge removal (prior to study) that establishes quantitative conditions related to altered flow velocity (speed and direction) attributed to the bridge, both upstream and downstream. Quantify and compare the cost associated with constructing, maintaining, and monitoring mitigation installations over a 20-year period with the cost of bridge removal. ▪ Move Yosemite Village Day-use Parking Area parking to the north, at least 150 feet away from the river.
Biological Values	▪ Ecologically restore portions of Backpackers Campground, North Pines Campground, and Lower Pines Campground. ▪ Ecologically restore 19.7 acres of habitat in Upper and Lower River Campgrounds area and locate all new campsites 150 feet away from the river.
Recreational Values	▪ Reduce traffic congestion with improvements to the transportation system and the design and location of day-use parking.

User Capacity, Land Use and Facilities Management

Alternative 5 (Preferred) would maintain a wide range of recreational opportunities, while removing a number of facilities from the river corridor. User capacities would accommodate the level of peak visitation seen in recent years, and improvements to the transportation system would improve the visitor experience (see Table 8-32). Proper infrastructure design and site delineation in high-use areas would ensure the long-term protection of river values.

Visitor Activities and Services

Alternative 5 (Preferred) would reduce some commercial facilities and services and relocate others outside of the river corridor. Reduced facilities and services would include the removal of redundant and underutilized facilities and services in Yosemite Valley, including gift shops, snack stands, and commercial horseback day rides. Alternative 5 (Preferred) would retain the grocery store at Housekeeping Camp, as well as three swimming pools in Yosemite Valley. Services that would be retained but relocated outside of the river corridor include raft rentals and bike rentals. The ice skating rink would be relocated outside of the river corridor to a parking lot in Curry Village and operated as a temporary, seasonal facility.

TABLE 8-32: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 5 (PREFERRED)

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 5	
	Unit Type	**Units**	**PAOT**	**Units**	**PAOT**
Wilderness Above Nevada Fall					
Visitor Overnight Use	Wilderness Zone Capacities & Beds	380	380	362	362
Visitor Day Use	Day Hikers	350	350	350	350
Employee Housing	Employee Beds	15	15	15	15
Administrative Day Use	Day Patrols	5	5	5	5

TABLE 8-32: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 5 (PREFERRED)

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 5	
	Unit Type	Units	PAOT	Units	PAOT
Yosemite Valley					
Visitor Overnight Use	Rooms & Campsites	1,500	6,564	1,722	7,831
Visitor Day Use	Parking Spaces& Buses	-	11,727	-	9,479
Employee Housing	Employee Beds	1,315	1,315	1,029	1,029
Administrative Day Use	Parking Spaces	166	332	187	374
Merced Gorge					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	180	869	180	869
Employee Housing	Employee Beds	9	9	9	9
Administrative Day Use	Parking Spaces	2	4	2	4
El Portal					
Visitor Overnight Use	Rooms and Campsites	-	-	40	240
Visitor Day Use	Parking Spaces	214	740	214	740
Employee Housing	Employee Beds	220	427	332	547
Administrative Day Use	Parking Spaces	610	1,220	610	1,220
South Fork Above Wawona					
Visitor Overnight Use	Permits	20	20	20	20
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1
Wawona					
Visitor Overnight Use	Rooms & Campsites	203	865	190	787
Visitor Day Use	Parking Spaces & Buses	-	1,295	-	1,606
Employee Housing	Employee Beds	121	121	121	121
Administrative Day Use	Parking Spaces	30	60	30	60
South Fork Below Wawona					
Visitor Overnight Use	Overnight Hikers	-	-	-	-
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1

Visitor Overnight Capacity

Camping

The campsite inventory in the Merced Wild and Scenic River corridor and Yosemite Valley would be increased by approximately 36%. All campsites within 100 feet of the river would be removed. Campsite losses would be offset with the addition of new camping adjacent to Upper Pines Campground and east of the Camp 4 Campground, as well as new sites west of Backpackers Campground, in the location of the former Upper and Lower River campgrounds, and in the El Portal Trailer Village. Under Alternative 5 (Preferred), the total number of campsites in Yosemite Valley would increase to 640—a net gain of 174 sites—and the total number of campsites available in the corridor would be 766. Table 8-33 provides a summary of the proposed changes to camping.

TABLE 8-33: CAMPING FACILITIES – ALTERNATIVE 5 (PREFERRED)

Existing Locations	Alt 1 (No Action)	Alt 5	Details
Backpackers	25 sites	10 sites	Retain 10 walk-in sites and remove 15 walk-in sites within 100 feet of river
Camp 4	35 sites	35 sites	No change to this National Historic Register Site
Lower Pines	76 sites	71 sites	5 sites within 100 feet of the river removed
North Pines	86 sites	72 sites	14 sites within 100 feet of the river removed
Upper Pines	240 sites	238 sites	2 sites removed for archeological resource concerns
Yellow Pine (Administrative)	4 sites	4 sites	No changes to these administrative group sites
Wawona Campground	99 sites	86 sites	13 sites within 100 feet of river or in culturally sensitive areas removed
Total Existing Locations	565 sites	516 sites	
New Locations	**Sites**	**Alt 5**	**Details**
West of Backpackers	0 sites	16 sites	16 walk-in sites constructed outside 100-year floodplain to replace the sites removed from Backpackers Campground
East of Camp 4	0 sites	35 sites	35 walk-in sites constructed in area east of Camp 4
Upper Pines	0 sites	87 sites	36-site RV loop and a walk-in campground with 49 sites and 2 group sites
Upper River	0 sites	32 sites	30 walk-in and 2 group sites constructed in the former Upper River Campground area, outside the 150-foot riparian buffer
Lower River	0 sites	40 sites	30 walk-in and 10 drive-in sites constructed in the former Lower River Campground area, outside the 150-foot riparian buffer
Abbieville/Trailer Village (Public and Administrative)	0 sites	40 sites	40 campsites (some with RV hook-ups) for public and administrative use
Total New Camping	0 sites	250 sites	
Total Camping in Corridor	565 sites	766 sites	

Lodging

Under Alternative 5 (Preferred), the number of lodging units would increase by a modest amount relative to existing conditions. Consistent with the 1980 GMP, lodging units would be removed from the area below the ordinary high-water mark at Housekeeping Camp. At Curry Village, some of the existing tent cabins at Boys Town would be removed and replaced with 52 hard-sided units, to increase the availability of year-round accommodations in the Valley. Fifty canvas tent cabins and 14 cabin-without-bath units would be retained at Boys Town to represent the historic camp configuration. The Merced Lake High Sierra Camp would be reduced in size (by approximately 30%). The net result of all changes proposed under Alternative 5 (Preferred) would be an increase of 37 units to the lodging inventory in the river corridor (Table 8-34).

Parking Inventory and Access Improvements

Under Alternative 5 (Preferred), parking for Yosemite Valley day use would increase by 8%, with the provision of a remote parking lot in El Portal. The total number of day-use parking spaces available for all river segments would be as shown in Table 8-35.

TABLE 8-34: LODGING FACILITIES – ALTERNATIVE 5 (PREFERRED)

Wilderness	Alt 1 (No Action)	Alt 5	Details
Merced Lake High Sierra Camp	22 units (60 beds)	11 units (42 beds)	18 beds removed from wilderness lodging facility; all historic tent cabin foundations retained in place
Yosemite Valley	**Alt 1**	**Alt 5**	**Details**
Ahwahnee Hotel	123 rooms	123 rooms	No change at this National Historic Landmark
Housekeeping Camp	266 units	232 units	Remove 34 units from within the ordinary high-water mark
Curry Village	400 units	482 units (351 canvas tent cabins and 131 hard-sided units)	▪ Retain 351 canvas tent cabins ▪ Retain 18 units at Stoneman House ▪ Retain 47 cabin-with-bath units ▪ Retain 14 cabin-without-bath units in Boys Town ▪ Construct 52 hard-sided units in Boys Town
Yosemite Lodge	245 rooms	245 rooms	No changes at lodging facility
Wawona	**Alt 1**	**Alt 5**	**Details**
Wawona Hotel	104 rooms	104 rooms	No change at this National Historic Landmark
Total Lodging in Corridor	1,160 units	1,197 units	

The most significant changes to parking and circulation would take place in the vicinity of Yosemite Village, Yosemite Lodge, and El Portal. The Yosemite Village Day-use Parking Area would be redesigned to provide 750 parking spaces. The new design would include pathways to better guide visitors to visitor services and eliminate pedestrian-vehicle conflicts. A traffic roundabout would be added to facilitate traffic flow and ease traffic congestion. A total of 300 day-use parking spaces would be provided west of Yosemite Lodge, in an area currently used for bus parking and storage. Bus parking would be provided adjacent to this new visitor parking area. Overflow parking during times of peak visitation would be available in El Portal (300 parking spaces). The ***total*** parking inventory in East Yosemite Valley (including day, overnight, and administrative uses) would be approximately 5,360 spaces. Including the remote parking lot provided in El Portal (300 day-use spaces), a total of 5,660 parking spaces would be provided for visitor and administrative access to Yosemite Valley.

Under Alternative 5 (Preferred), regional transit options and shuttle services would be expanded.

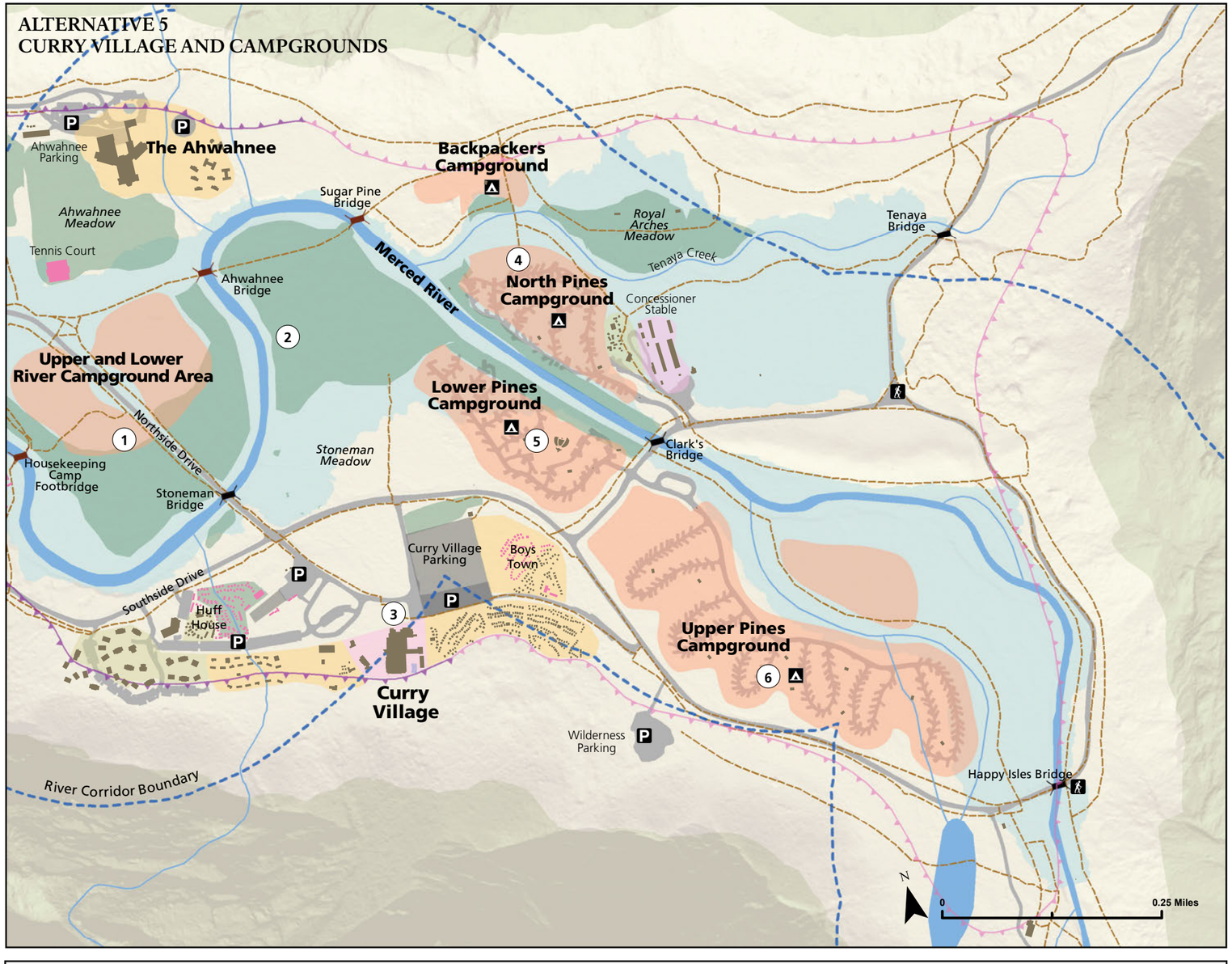
TABLE 8-35: NUMBER OF DAY-USE PARKING SPACES IN SEGMENTS – ALTERNATIVE 5 (PREFERRED)

Location	Alt 1 (No Action)	Alt 5
Segment 2:Yosemite Valley	2,337 spaces	2,220 spaces
Segment 3:The Gorge	180 spaces	180 spaces
Segment 4:El Portal	214 spaces	514 spaces*
Segment 7: Wawona	290 spaces	290 spaces
Total Parking	3,021 spaces	3,204 spaces

NOTE:

* 300 new spaces in El Portal are located in the El Portal Remote Parking Area. While these spaces are located in El Portal and are therefore counted as part of the parking inventory of Segment 4, most of the use associated with these spaces would occur in Yosemite Valley.

ALTERNATIVE 5: ENHANCED VISITOR EXPERIENCES AND ESSENTIAL RIVERBANK RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

(1) Upper and Lower River Campground
- Lower River Campground: Construct a new campground 150 feet away from the river with 30 walk-in sites and 10 drive-in sites. Retain the Lower River Amphitheatre. Provide picnic tables and parking for day use and directed river access to the Housekeeping Camp eastern beach. Designate boating put-in at this location.
- Upper River Campground: Construct a new campground 150 feet away from the river with 30 walk-in sites and two group sites. Restore hydrologic processes in the southeast portion of the area.
- Restoration: Restore 19.7acres of floodplain. Protect the riverbank from trampling by fencing sensitive areas.

(2) River Reach Between Bridges
- Ahwahnee and Sugar Pine Bridges: Retain Ahwahnee Bridge and the Sugar Pine Bridge. Additional study will be conducted to determine the hydrologic impacts of the historic Sugar Pine Bridge. The study will include criteria that establish quantitative conditions related to altered flow velocity attributed to the bridge, both upstream and downstream and/or the costs associated with constructing, maintaining, and monitoring mitigation installations over a 20-year period versus the cost of bridge removal.
- Stoneman Bridge: Mitigate effects of bridge to alluvial river processes through engineered solutions: place large wood to lessen scouring, and use brushlayering and a constructed log jam. Add culverts along Northside Drive.

(3) Curry Village Area
- Lodging: Total would be 482 guest units, including: 301 tents cabins in Curry Village retained; 50 tent cabins and 14 cabins without baths retained in the historic Boys Town configuration; 52 hard-sided units in Boys Town would be constructed (16 duplex and 5 four-plex cabins with baths); 18 units at Stoneman House would be retained; and 47 cabin-with-bath units in Curry Village would be retained.
- Curry Orchard Parking Area: Provide 415 parking spaces through a re-design of the parking area that incorporates best management practices to protect water quality. Also, apply engineering solutions to promote water flow and to increase drainage to Stoneman Meadow. Remove most of the apple trees to mitigate human-bear interactions and plant native vegetation.
- Facilities and Services: Move ice rink to parking area outside of the river corridor and retain this seasonal activity. Move the bicycle and raft rental services outside of the Wild and Scenic River corridor.
- Huff House Housing: Remove most temporary housing development at Huff House. Retain 10 tent cabins (20 beds) and the historic Peterson House.
- Curry Village Day-use Parking: Within the existing disturbance footprint at the Curry Village Ice Rink area, provide visitor day-use and employee commuter parking for 189 vehicles.
- Huff House Black Oak Restoration: Remove temporary housing and associated infrastructure, retaining pedestrian walkways as appropriate. Actively restore oak habitat restoring natural topography, de-compacting soils, and planting or seeding if necessary. Protect area as it re-vegetates with fencing.

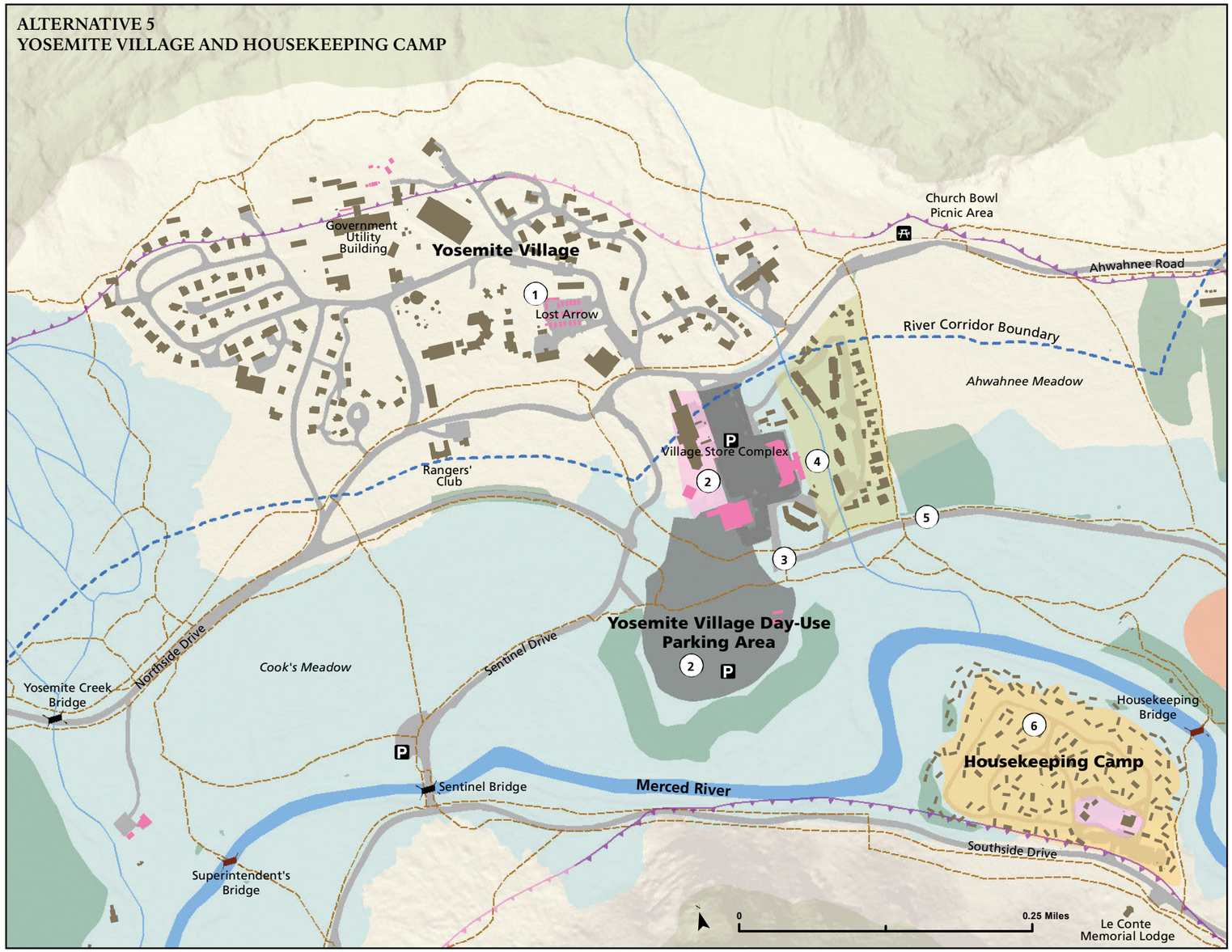
(4) North Pines Campground Area
- Ecological Restoration at Campgrounds: Remove campsites within 100 feet of the river at North Pines, Backpackers and Lower Pines campgrounds. Restore 6.5 acres of riparian habitat. Designate a formal river access point at North Pines campground.
- Backpackers Campground: Retain 10 walk-in sites. Remove 15 walk-in sites within the 100-foot riparian buffer to be replaced by 16 walk-in sites west of Backpackers Campground.
- North Pines Campground: Retain 72 campsites. Remove 14 sites from within 100 feet of river.
- Concessioner Stables in Yosemite Valley: Retain stables to support the operation of the Merced Lake High Sierra Camp. Provide overflow parking for campgrounds at the stables. Retain kennel service. Retain associated housing (49 beds).

(5) Lower Pines Campground Area
- Campground Sites: Retain 71 campsites and remove five sites from within 100 feet of river.

(6) Upper Pines Campground Area
- Campground Sites: Retain 238 campsites. Remove two sites for sensitive resource concerns.
- New RV Loop: Construct a new campground loop with 36 RV sites.
- New Walk-in Sites: Construct a new walk-in campground with 49 sites and two group camping sites.

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ALTERNATIVE 5: ENHANCED VISITOR EXPERIENCES AND ESSENTIAL RIVERBANK RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

(1) Lost Arrow: Replace temporary employee housing with permanent housing units for 87 beds.

(2) Yosemite Village Day-use Parking Area: Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river, out of the riparian buffer, to facilitate riparian restoration goals. Using best management practices to protect water quality, formalize the parking area to have a total of 750 parking places by redeveloping part of the current administrative footprint as parking.

(3) Pedestrian/Vehicle Conflicts: Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area and construct a roundabout at Northside Drive and Village Drive to address traffic congestion and pedestrian vehicle conflicts. Re-routing the road south of the parking area results in a traffic circulation pattern that will not require an underpass or pedestrian road crossings. Consolidate parking to the north of the road and provide walkways leading to Yosemite Village separating vehicle and pedestrian traffic. Add a three-way intersection at Sentinel Drive and the entrance to the parking area to improve traffic flow and alleviate congestion.

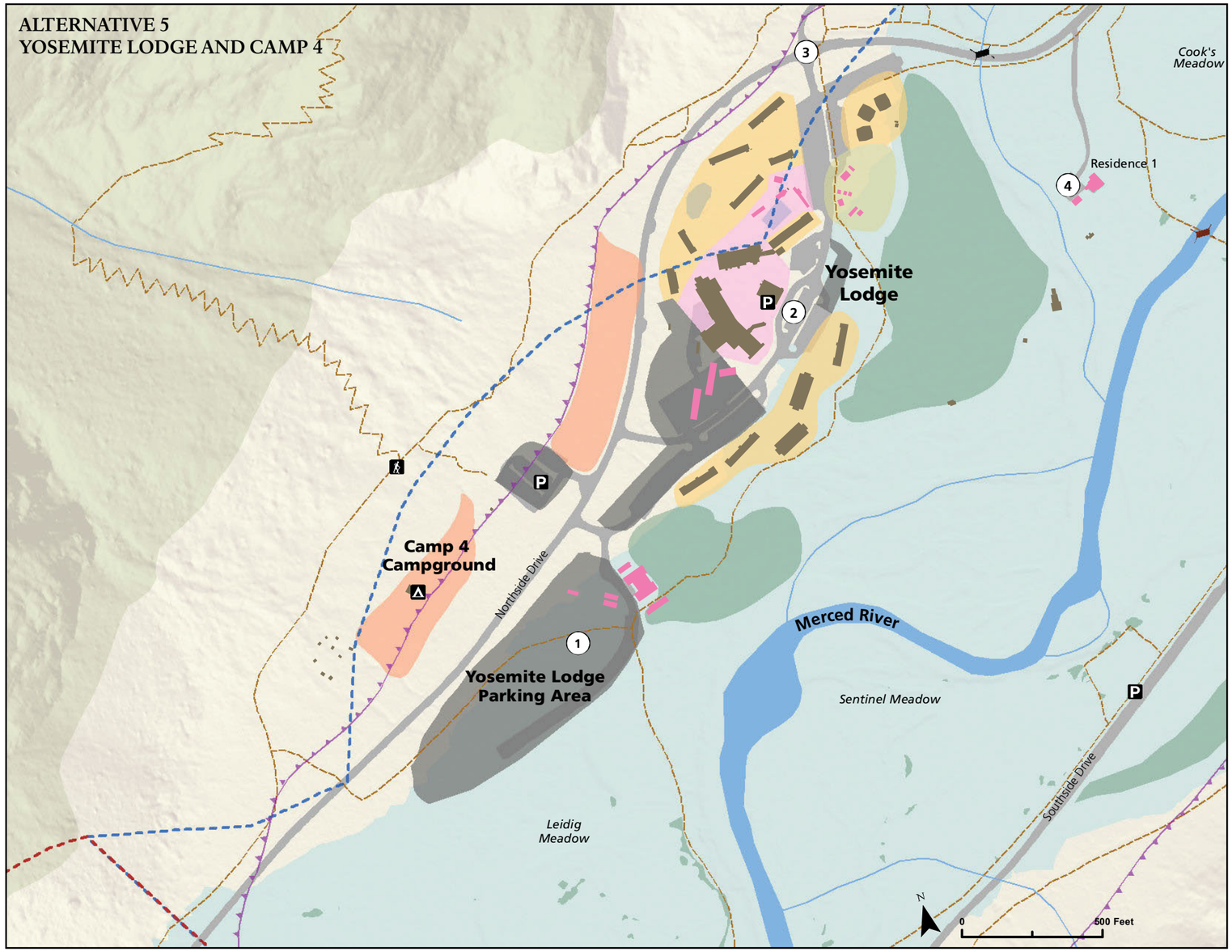
(4) Concessioner Employee Housing: Create a 50-foot setback from Indian Creek. Ecologically restore the riparian habitat, and protect using restoration fencing. Retain Ahwahnee Row and Tecoya employee housing.

(5) Ahwahnee Meadow Restoration: Retain Northside Drive and bike path and increase culverts to improve hydrologic connectivity. Replace 350 feet of trail with a boardwalk to protect wetlands.

(6) Housekeeping Camp Lodging: Retain 232 lodging units and remove 34 lodging units (17 buildings) from within the ordinary high water mark. Retain Housekeeping Camp grocery store, shower houses, restrooms, and laundry. Restore one acre of the riparian ecosystem.

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ALTERNATIVE 5: ENHANCED VISITOR EXPERIENCES AND ESSENTIAL RIVERBANK RESTORATION



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EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

(1) West of Yosemite Lodge
- Parking: Redevelop area southwest of Yosemite Lodge to provide an additional 300 day-use parking spaces. This will include 22 spaces for tour bus parking. Parking redevelopment will incorporate best management practices to protect water quality.

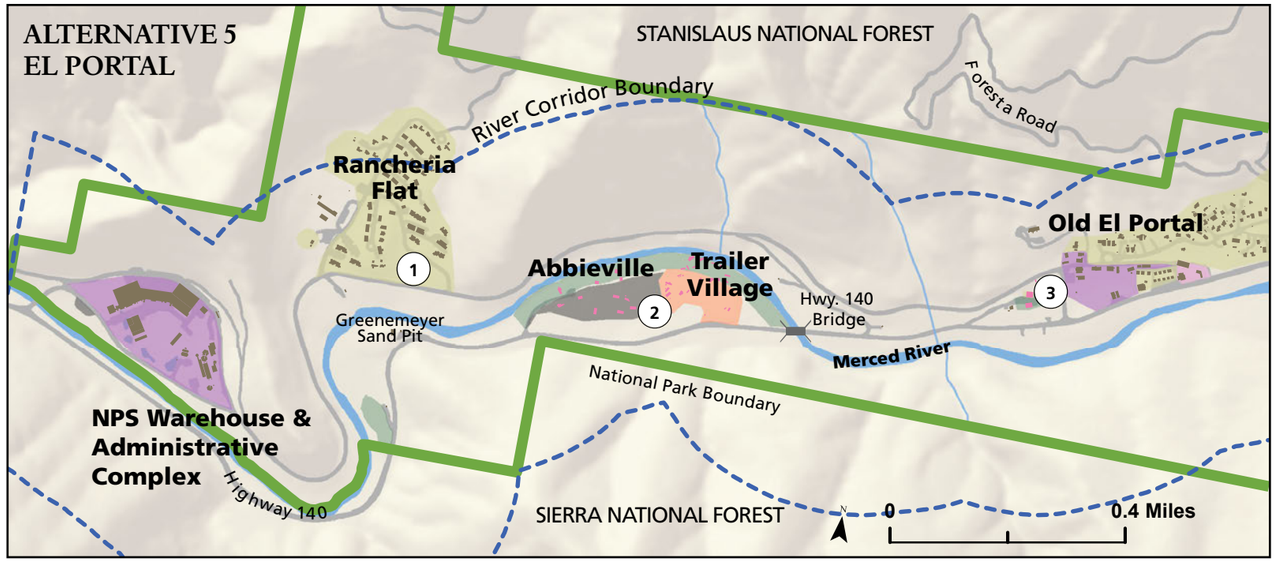
(2) Yosemite Lodge
- Ecological restoration: restore riparian and floodplain ecosystem at the site of the former Yosemite Lodge units and cabins (those that were damaged by the 1997 flood and subsequently removed). Delineate one service road to the well house and parking. Remove non-native fill, decompact soils, and plant riparian plant species (10.9 acres).
- Lodging: Retain the current 245 units at Yosemite Lodge.
- Services and Facilities: Retain Yosemite Lodge Food Court and Mountain Room bar and dining service. Retain swimming pool facility. Relocate bicycle rental facility outside the river corridor. Re-purpose convenience shop and nature shop. Relocate Yosemite Lodge maintenance. Remove post office, snack stand, employee housing (Thousands Cabins), Highland Court employee temporary housing, and the NPS Volunteer Office.
- Tour Buses: Expand parking area for bus loading and unloading to provide 6 spaces.
- Concessioner Housing: Construct two new concessioner housing areas for 104 employees and provide 84 employee parking spaces.

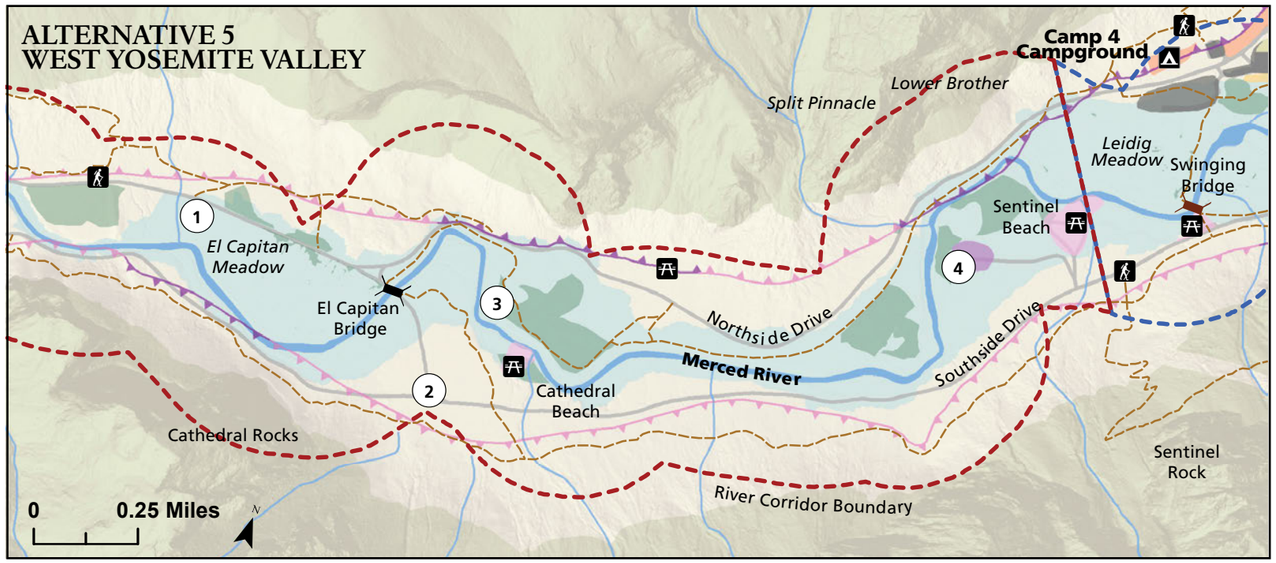
(3) Yosemite Falls Intersection
- Traffic Congestion: A tiered NEPA / NHPA compliance effort will evaluate a range of alternatives to address the pedestrian / vehicle conflicts and traffic congestion at this intersection. The grade-separated crossing that is selected will include design guidelines to ensure that archeological impacts are avoided or minimized, the safety of pedestrians is maximized, and visual impacts are mitigated.

(4) Residence 1
- Residence 1: Remove the historic Residence 1 (Superintendent's House) and Garage. Ecologically restore associated informal trails in Cook's Meadow.

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ALTERNATIVE 5: ENHANCED VISITOR EXPERIENCES AND ESSENTIAL RIVERBANK RESTORATION





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EL PORTAL

(1) Rancheria Flat
- Employee Housing: To replace temporary housing that will be removed from Yosemite Valley, construct a combination of single-family homes and high-density dormitory units—away from sensitive resources—for a total of 130 additional employee beds.

(2) Abbieville and Trailer Village Area
- El Portal Remote Visitor Parking: Construct a new visitor parking area for 300 spaces serviced by shuttle to Yosemite Valley. Parking redevelopment will incorporate best management practices to protect water quality.
- Abbieville and Trailer Village Housing: Remove or relocate 36 existing private residences. As homes within the 150-foot riparian buffer become vacant, ecologically restore these areas.
- Campground: 40 campsites, some with water and sanitary hook-ups, will be incorporated into the redesign of the area. These sites will be available for both visitor and administrative use.
- Visitor Facilities: Additional restroom facilities to serve the parking area and campground will be constructed. The existing laundry facility will remain. River access points will be determined and incorporated into the design.

(3) El Portal Village Center
- Valley Oak Restoration: Restore the rare floodplain community of Valley oaks in Old El Portal through implementation of best management practices. Create a Valley oak recruitment area in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including the adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants.
- Odger's Fuel Storage Facility: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.
- Infill Housing: Construct housing to accommodate 18 beds (this housing is in addition to the 12 infill-housing units proposed in Alternatives 2-6). These units will not adversely impact ORVs and will retain the restoration and recruitment objectives for Valley oaks.

WEST YOSEMITE VALLEY

(1) El Capitan Meadow Area
- Restoration of Informal Trails: Remove all informal trails from the meadow that incise, promote habitat fragmentation, or are located in sensitive and frequently inundated areas, and restore to natural condition. Designate appropriate access points. Selectively remove mature conifers that block views of El Capitan from the roadside.

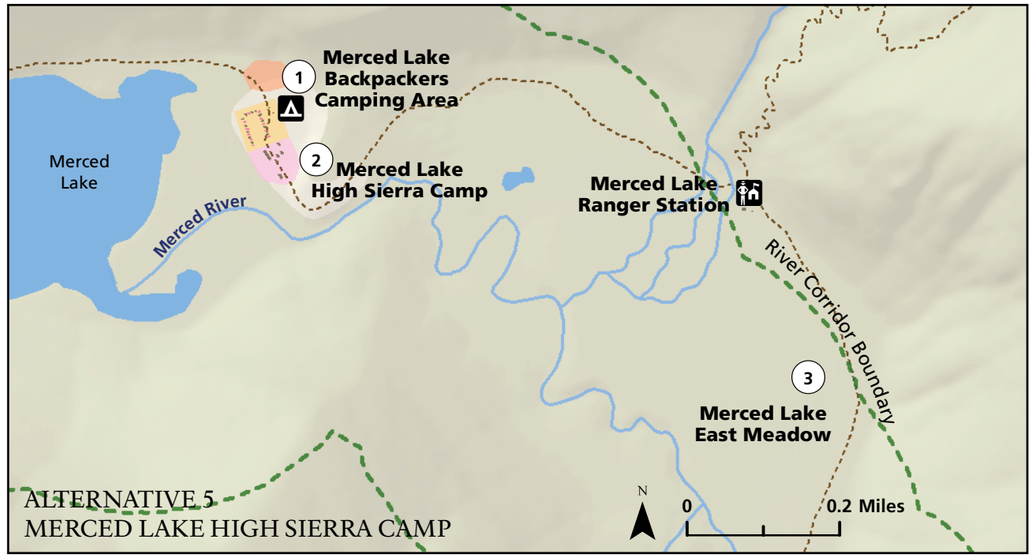
(2) El Capitan Crossover
- User-Capacity Management Program: The El Capitan Crossover Traffic Diversion will be implemented to manage use to the capacities established for this alternative.

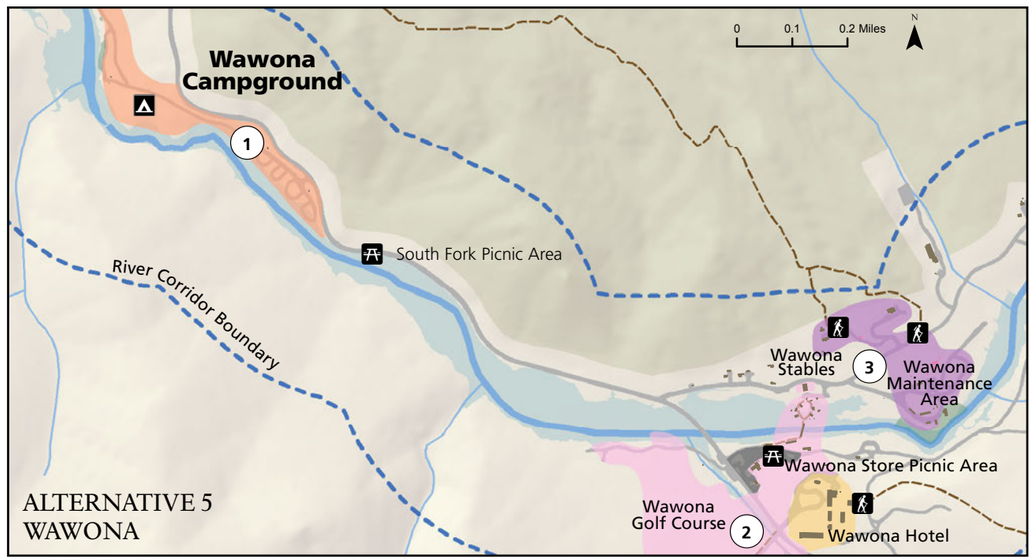
(3) Valley Loop Trail
- Re-Route: Move portions of the Valley Loop Trail out of sensitive areas; this includes the 780 feet of the trail through Bridalveil Meadow. Construct boardwalks through wet meadow habitat in Slaughterhouse Meadow.

(4) Yellow Pine Campground
- Administrative Use Campground: Retain Yellow Pine's four group sites (serving up to 120 people) for administrative use.

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ALTERNATIVE 5: ENHANCED VISITOR EXPERIENCES AND ESSENTIAL RIVERBANK RESTORATION





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MERCED LAKE HIGH SIERRA CAMP

(1) Merced Lake Backpackers Camping Area: Retain the designated camping area. Replace flush toilets with composting toilets.

(2) Merced Lake High Sierra Camp: Remove 11 of the 22 historic canvas tents (retaining 42 of the 60 existing beds) but retain all the tent pads in situ to preserve these historic resources. Replace flush toilet with composting toilets. To resupply the camp, a limit of 7.5 pack strings per week would be established.

(3) Merced Lake East Meadow: Establish a preliminary grazing capacity for the Merced Lake East Meadow of a maximum of 58 pack stock nights annually depending on meadow condition. Exclude packstock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adapted to ensure the meadow condition meets the Management Standard for Bare Soil Indicator.

OTHER SEGMENT 1 CAMPING AREAS (NOT SHOWN ON MAP)

- Little Yosemite Valley: Continue designated camping in this camping area. Retain infrastructure, such as composting toilets.
- Moraine Dome: Continue designated camping in this camping area.

WAWONA

(1) The Wawona Campground: Retain 83 sites and one group site. Remove 13 sites that are either within 100 feet of the river or in culturally sensitive areas.

(2) Wawona Golf Course and Golf Shop: Retain nine-hole golf course and retail and food service at golf shop.

(3) Wawona Stables Area and Maintenance Yard

- Stables Operation: Retain stables and commercial day rides.
- Stock-Use: Campsites: Relocate two stock-use campground sites away from sensitive resource areas to an appropriate location within the Wawona Maintenance Yard area.

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Detailed Description of Alternative 5 (Preferred) by Segment

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 5 (Preferred) would include the following actions to protect and enhance river values:

Biological Values

- Establish a preliminary grazing capacity for the Merced Lake East Meadow of a maximum of 58 pack-stock nights annually, depending on meadow condition. Exclude packstock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adapted to ensure the meadow condition meets the management standard for the bare soil indicator (Chapter 5).

Recreational Values

- Establish a limit of 7.5 pack strings per week (for an average of 30 strings per month) for resupply of the Merced Lake High Sierra Camp.

User Capacity, Land Use and Facilities Management

Alternative 5 (Preferred) would generally accommodate the same kinds and amounts of use that exist today in Segment 1. In addition to the "Actions Common to Alternatives 2-6", Alternative 5 (Preferred) would include the actions described below to manage user capacity, land use and facilities.

Visitor Activities and Services

Overnight use in this segment would include visitors staying at the Merced Lake High Sierra Camp and visitors backpacking and staying overnight at either designated camping areas or dispersed areas throughout the wilderness. Private boating would be allowed in Segment 1. This use would likely consist of short floats, using boats that could easily be carried into this remote area. Only 25 boats per day would be allowed, and a permit would be required as an addition to the wilderness permit required for camping. See Appendix R for additional information on equipment restrictions, open stretches, and put-in and take-out locations.

Under Alternative 5 (Preferred), the findings of the Determination of Extent Necessary (DEN) (Appendix L) would be implemented. Following is a summary of the commercial use permitted:

- Allowance of up to two overnight commercial groups per Wilderness zone.
- No camping or travel allowed more than ¼ mile from a maintained trail or public access road.
- All commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of three persons (including employees), two pack animals are allowed in addition to three riding stock.
- Additional seasonal and weekend restrictions would apply in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones, as indicated in Appendix L.

Visitor Overnight Capacity

Under Alternative 5 (Preferred), wilderness zone capacities would remain as currently established (Table 8-36). Facilities would be managed as follows:

- Retain the Merced Lake Backpacker Camping Area; replace flush toilets with composting toilets.
- Retain the Merced Lake High Sierra Camp at a reduced capacity of 42 beds. Retain the historic tent cabin foundations. Replace flush toilets with composting toilets.
- Retain designated camping areas at Little Yosemite Valley and Moraine Dome.

TABLE 8-36: WILDERNESS ZONE CAPACITIES FOR ALTERNATIVE 5 (PREFERRED)

Wilderness Zones	Alt 5 Overnight Zone Capacity	Alt 5 Zone Capacity* Within River Corridor Only
Little Yosemite Valley Zone	**150** people	**150** people
Merced Lake Zone	**50** people	**50** people
Washburn Lake Zone	**150** people	**100** people
Mount Lyell Zone	**50** people	**10** people
Clark Range Zone	**50** people	**10** people

NOTE:
* For some Wilderness zones, only a small portion of river corridor overlaps the zone. Therefore, the NPS calculated corridor-specific capacities that reflect the number of people in both the wilderness zone and the river corridor portion of the zone. These calculations assume visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Visitor Day-use Parking Capacity

Day-use access to this segment is addressed under "Actions Common to Alternatives 2-6" (beginning on page 8-47).

Administrative Activities

- Continue current administrative activities, which consist primarily of regular ranger patrols, backcountry utility work, and occasional trail/restoration work. These activities are seasonal and minimal in comparison to visitor use and would not significantly affect overall user capacity.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 5 (Preferred) would include the following actions to protect and enhance river values:

Geological/Hydrological Values

- **Stoneman Bridge** – Retain Stoneman Bridge; mitigate the hydrological effects of the bridge by placing large wood on the riverbanks to address scouring, adding brush layering, and increasing channel complexity between Clark's Bridge and Sentinel Bridge (as described in Chapter 5 and Appendix E).
- **Sugar Pine Bridge** – Retain Sugar Pine Bridge in place for the immediate future. To address the localized impacts that have been attributed to Sugar Pine Bridge, the NPS will initiate a study to assess the merits of various long-term bridge management strategies. The study will first assess the

nature and extent of impacts associated with the bridge and then identify and test potential mitigation measures. If mitigation measures fail to meet defined criteria for success, consideration of bridge removal would involve a public review process and additional environmental compliance. As a first step, an evaluation of baseline conditions over an adequate range of flow conditions (including peak flows equal to or exceeding the two year flood) would be conducted. During this time, specifications for the installation of mitigation measures would be developed. The primary outcomes of this step would be: 1) the evaluation of scientific questions related to the impacts of the bridge; 2) a list of measurable attributes that quantify impacts, as well as thresholds (criteria) for those attributes that define mitigation success; and 3) the subsequent identification of potential mitigation measures and their general specifications. The investigation would then center on installing and evaluating mitigation measures. This component would be adaptively managed so that progressively intensive mitigation measures would be employed during the evaluation process, as deemed necessary to achieve mitigation objectives. The final action will be informed by the conclusions of a monitoring program designed to evaluate the efficacy, durability, and long-term costs of mitigation management.

- **Ahwahnee Bridge** – Retain the Ahwahnee Bridge; mitigate the hydrological effects of the bridge by placing large wood on the riverbanks to address scouring, adding brush layering, and increasing channel complexity between Clark's Bridge and Sentinel Bridge (as described in Chapter 5 and Appendix E). Construct a multi-use trail from the end of the Ahwahnee Bridge to the Lower Pines area.

Water Quality

- Re-route the pack stock trail (from the Concessioner Stables) to the north, adjacent to the Happy Isles Loop Road (the existing trail is removed and ecologically restored under Alternatives 2-6).

Biological Values

Alternative 5 (Preferred) would remove existing campsites within 100 feet of the ordinary high-water mark.

- Remove all existing campsites and associated infrastructure within 100 feet of the ordinary high-water mark and restore natural floodplain and riparian habitat (12 acres) at:
  - **Backpackers Campground**: Remove 15 sites within 100 feet of the ordinary high-water mark. Locate new sites to the west of the current campground, in less sensitive area outside the 100-year floodplain.
  - **North Pines Campground**: Remove 14 campsites from within 100 feet of the ordinary high-water mark; restore native riparian vegetation.
  - **Lower Pines Campground**: Remove 5 sites from within 100 feet of the ordinary high-water mark; restore native riparian vegetation.
  - **Upper Pines Campground:** Retain 238 campsites, removing two sites for archeological resource concerns.
- **Upper and Lower River Campgrounds** – Restore topography of 19.7 acres of floodplain. Remove remaining asphalt, decompact soils under former roads and campsites and re-establish channels that have been filled. Place large box culverts or other design components, such as rolling dips and permeable subgrade, to improve surface water flow. Fence and close the riparian zone at former Upper River to protect the riverbank from trampling. Direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach.
- **Former Pine and Oak Units** – Restore 10.9 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins (those that were removed after the 1997 flood) and Volunteers in Parks Office while maintaining access to the well house.

- **Yosemite Village** – Move the Yosemite Village Day-use Parking Area northward so that it is 150 feet away from the ordinary high-water mark of the Merced River and outside a designated 50-foot setback from Indian Creek; remove fill material and restore the riparian habitat adjacent to the river.
- **Housekeeping Camp** – Remove lodging and other facilities at Housekeeping Camp out of the ordinary high-water mark (remove 34 units); restore native riparian habitat (one acre). Direct visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge; fence off the current eastern river access point (located on a steep eroded bank) and actively restore the riverbank with brush layering.

Alternative 5 (Preferred) would remove or mitigate the effects of trails and roads through meadows:

- **Bridalveil Meadow** – Re-route the 780-foot segment of the Valley Loop Trail that crosses Bridalveil Meadow so that it is adjacent to Southside Drive.
- **Slaughterhouse Meadow** – Construct boardwalks or employ other techniques to address social trailing through sensitive wet meadow habitat at Slaughterhouse Meadow.
- **El Capitan Meadow** – Fence the northern perimeter of the meadow to protect the restoration area, construct boardwalks and/or viewing platforms or employ other techniques to address social trailing in the meadow. Selectively remove mature conifers that block views of El Capitan from the roadside to discourage foot traffic into the meadow.
- **Ahwahnee Meadow** – Retain Northside Drive and bike path in current configuration; add culverts to improve hydrologic connectivity through Ahwahnee Meadow. Install a boardwalk, puncheon, or other measure to cross low-lying wet areas in Ahwahnee Meadow (350 feet long).
- **Stoneman Meadow** – Retain Southside Drive through Stoneman Meadow; conduct transportation and engineering studies to examine the potential impact to ingress and egress from removing this road segment and to assess construction methods to increase surface water flow. Expand the fenced area on the north end of the meadow near Lower Pines Campground to protect wetlands. Remove roadside parking along Stoneman Meadow and restore the area.

Cultural Values

- Huff House Black Oak Restoration – Remove temporary housing and associated infrastructure, retaining pedestrian walkways as appropriate. Actively restore oak habitat, restoring natural topography, de-compacting soils, and planting or seeding if necessary. Protect area with fencing as it revegetates.

Recreational Values

- **Boating Opportunities** – Allow up to 295 boats per day through a mix of both private and commercial use in East Yosemite Valley. Allow boating for 45 private boaters in West Yosemite Valley. Boating would be limited to specific stretches of river in Yosemite Valley. Expanded boating opportunties would enhance dispersed recreation along the river corridor.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Alternative 5 (Preferred) would generally provide for the same kinds and amounts of use that exist in Yosemite Valley today. The following changes to visitor activities and services would occur, in addition to those common to Alternatives 2-6:

- Allow both private boating and commercial rafting in this river segment, and expand private boating access to include addition reaches of the Merced River.
    - Private boating (estimated at 150 boats per day) would be allowed between Lower River Campground and Sentinel Beach/Yellow Pine. The put-ins and take-outs for this river segment (2A) would be located at the Lower River Day-use Area and Sentinel Beach. An additional 45 private boaters would be allowed to float between Clark's Bridge and Sentinel Beach. A capacity of 195 private boats per day has been set for this river segment (2A). Additionally, 45 people per day would be allowed to boat in the West Valley segment (2B) (between Sentinel Beach and just below Pohono Bridge).
    - Commercial raft rentals would be available for use in the river reach between Stoneman Bridge and Sentinel Beach. This use would be limited to 50 boats-at-one-time (approximately 100 boats per day).
    - See Appendix R for additional information on equipment restrictions, open stretches, and put-in and take-out locations.
- Expand picnicking and day-use opportunities at Yosemite Village, Church Bowl, and Happy Isles.
- Provide low-impact picnicking opportunities (no more than eight tables and 20 parking spaces) and designated river access for rafting in the Lower River area.
- Move the raft rentals and bicycle rentals at Curry Village to a location outside of the river corridor.
- Move the bicycle rentals at Yosemite Lodge to a location outside of the river corridor.
- Move the ice skating rink at Curry Village to the Curry Village Parking Area (outside of the river corridor); the rink would be operated as a temporary, seasonal facility.
- Retain the swimming pools at the Ahwahnee Hotel, Yosemite Lodge, and Curry Village.
- Retain the Housekeeping Camp shower houses, restrooms, laundry, and grocery store.
- Retain the Concessioner Stables in Yosemite Valley to support Merced Lake High Sierra Camp and to provide overflow parking for campgrounds. Eliminate commercial horseback day rides originating from Yosemite Valley. Retain existing boarding service for pets and large animals.

Visitor Overnight Capacity: Camping

Under Alternative 6, camping would be increased to 640 sites, accommodating up to 4,032 people per night.

- **Backpackers Campground** – Retain 10 walk-in sites. Remove 15 sites within 100 feet of the ordinary high-water mark. Construct 16 new walk-in campsites to the west of the current Backpackers Campground in less sensitive area outside the 100-year floodplain.
- **Upper River Campground** – Construct a new campground with 30 walk-in sites and two group sites, north of the river outside of the 150-foot riparian buffer. Restore hydrologic processes in the southeast portion of the former campground.
- **Lower River Campground** – Construct a new campground with 30 walk-in and 10 drive-in campsites outside of the 150-foot riparian buffer. Accessible drive-in campsites would be incorporated into the design. The campground area would incorporate a boating access point and commercial raft launch site congruent with ecological restoration objectives. Restore hydrologic processes in the southeast portion of the former campground.
- **North Pines Campground** – Retain 72 campsites. Remove 14 sites from within 100 feet of the ordinary high-water mark.

- **Upper Pines Campground** –Remove two sites for archeological resource concerns; retaining 238 campsites. Construct a new recreational vehicle campground loop with 36 RV sites (with hook-ups). Construct a new walk-in campground with 49 individual sites and two group sites.
- **Lower Pines Campground** – Retain 71 campsites. Remove five sites from within 100 feet of the ordinary high-water mark.
- **Camp 4** – Retain 35 walk-in campsites and 35 parking spaces. Construct 35 additional campsites east of Camp 4; establish a new parking area (41 spaces) in the footprint of the former service station.
- **Yellow Pine** – Retain four group campsites (up to 120 people) at the Yellow Pine Administrative Campground.
- **Abbieville/Trailer Village** – Incorporate campsites (some with hook-ups) into the redesign of the Abbieville/Trailer Village area, adjacent to the El Portal Remote Parking Area. These campsites would be used for both visitors and administrative use (seasonal employee housing). A clear distinction between the types of uses would be factored into the design. All redevelopment would be located outside of the 150-foot riparian buffer.

Visitor Overnight Capacity: Lodging

Under Alternative 5 (Preferred), lodging units would be increased slightly for a total of 1,082 units, accommodating 3,799 people per night. As in all other alternatives, the Ahwahnee Hotel would continue to provide 123 rooms. The following additional lodging would be retained, removed, or constructed under Alternative 5 (Preferred):

- **Curry Village** – A total of 482 lodging units would be provided. Retain 430 existing lodging units in Curry Village: 301 canvas tent cabins; 18 units at Stoneman House; 47 hard-sided cabin-with-bath units. In Boys Town, retain 50 historic canvas tent cabins and 14 cabin-without-bath units in their historic configuration. Remove the canvas tent cabins that were installed in Boys Town after the 2008 rock-fall incident and replace with 52 hard-sided lodging units in duplex and 4-plex cabins. Provide 415 designated overnight parking spaces at the Curry Orchard Parking Area.
- **Housekeeping Camp** – Retain 232 units and associated facilities. Remove 34 units (17 buildings) located within the ordinary high-water mark.
- **Yosemite Lodge** – Retain the existing 245 lodging units.

Visitor Day-use Parking Capacity, Transit Options, and Circulation

Alternative 5 (Preferred) would accommodate the peak level of visitation observed in recent years. Day-use parking, regional transit, and tour bus capacities would accommodate up to 9,478 people at one time in Segment 2.

- Reduce the number of day-use parking spaces (-117 spaces) and provide a total of 2,220 parking spaces in Yosemite Valley. Provide additional day-use parking in El Portal (+300 spaces). Including the El Portal lot, the net gain in parking for day use in Yosemite Valley would be 183 spaces.

Under Alternative 5 (Preferred), several changes to the design of the transportation system would be made to reduce traffic congestion and improve the visitor experience. Major transportation-related actions would include the following:

- Redesign the Yosemite Village Day-use Parking Area to provide 750 spaces, a new comfort station, and strategically placed shuttle stops. Include pathways to separate pedestrian traffic from vehicle traffic, and a traffic roundabout to facilitate traffic flow.

- Provide 300 day-use parking spaces and 22 parking spaces for tour buses west of Yosemite Lodge.
- Provide 189 day-use and employee parking spaces at the Curry Village Day-use Parking Area, west of the Curry Orchard Parking Area.
- Determine the design and location for a grade-separated pedestrian crossing for Northside Drive at Yosemite Falls to alleviate traffic congestion. Completion of this project would require additional NEPA/NHPA compliance, including the appropriate level of public involvement.

Preliminary drawings for the Yosemite Village Day-use Parking Area and the new parking lot west of Yosemite Lodge, as proposed in Alternative 5, have been completed to assess the feasibility of these projects. See "Conceptual Site Drawings" at the end of the Alternative 5 discussion for site details and design drawings.

Day use in Yosemite Valley would be managed using the El Capitan Traffic Diversion. The El Capitan crossover has been used by park staff for many years to mitigate traffic congestion during times of peak visitation. The crossover is ideally located for this purpose because roads from all park entries join Southside Drive prior to reaching this location. Therefore, all in-bound vehicles must pass through this location and can be redirected to outbound traffic lanes prior to reaching East Valley. Data regarding traffic accumulation would be collected by automated traffic counters and reported in real-time to park managers. Before East Valley capacity was reached, park staff would begin re-routing traffic from Valley destinations until conditions improved. The availability of real-time data would allow for a proactive response to a dynamic, but fairly predictable, event. Day-use visitors would also be able to access the Valley by parking in the new El Portal remote parking lot (300 parking spaces) and taking a shuttle.

A summary of regional transit and shuttle options for this alterative is located in Table 8-37. Regional transit services into Yosemite Valley during the peak summer season would be expanded as follows:

TABLE 8-37: TRANSIT OPTIONS – ALTERNATIVE 5 (PREFERRED)

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	12 runs per day (maximum service level - year round service)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	12 runs per day (maximum service level - year round service) Dedicated shuttle to Badger Pass as collection point for shuttle to Glacier Point
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	4 runs per day (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	2 runs per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	5 minute peak interval between buses Year-round except Visitor Center direct
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	7 minute interval between buses (summer only)
El Capitan Crossover	30 minute interval between buses (summer only)
West Yosemite Valley	Expand Valley Shuttle service to Bridalveil (summer only) 60-minute interval between buses Stops at El Capitan picnic area, El Capitan Meadow, Bridalveil Fall straight, Cathedral Beach, Yellow Pine, and Four-mile/Swinging Bridge
NOTE: *All Regional Transit runs are round trip.	

- **Highway 140 (Merced to Yosemite Valley)** – Maintain service at 12 runs per day.
- **Highway 41 between Fresno/Oakhurst and Yosemite Valley** – Provide additional regional transit service of 12 runs per day.
- **Highway 120 West (Sonora to Yosemite Valley)** – Increase service to four runs per day (summer only).
- **Highway 120 East (Mammoth Lakes to Yosemite Valley)** – Increase service to two runs per day (summer only).

Under Alternatives 2-6, East Valley shuttle service would be improved by reducing the time between buses to five-minute intervals. The Visitor Center Express shuttle service (summer only) would be improved by increasing the frequency to seven-minute intervals. Shuttle service would be expanded as follows:

- Expand Valley Shuttle service to Bridalveil (summer only), with 60-minute intervals between buses and stops at El Capitan picnic area, El Capitan Meadow, Bridalveil Fall straight, Cathedral Beach, Yellow Pine, and Four-Mile/Swinging Bridge.
- Add shuttle service between the El Portal Remote Parking Area and Yosemite Valley.

Administrative Activities

The following administrative facilities and functions would be relocated:

- Move the Yosemite Lodge housekeeping and maintenance facilities to a location behind the Yosemite Lodge cafeteria.
- Demolish the Concessioner Garage and General Office. Move these functions to locations outside of the river corridor.

Employee Housing and Employee Parking

Under Alternative 5 (Preferred), 286 fewer concessioner employees would be housed in Yosemite Valley. The remaining housing for 865 concessioner employees would be provided as follows:

- Retain housing for 42 employees in the dorm at the Ahwahnee Hotel.
- Provide housing for 292 employees at Curry Village.
  - Retain permanent housing in the Curry Village residential area (219 employees).
  - Retain employee housing at Concessioner Stables in Yosemite Valley (49 employees).
  - Retain the historic Peterson Residence (4 beds) and an additional 10 canvas tent cabins (20 beds) for a total of 24 employee beds in the Huff House (Curry Village) area.
- Provide housing for 427 employees at Yosemite Village.
  - Retain permanent housing at Indian Creek and Upper Tecoya (28 employees).
  - Retain Ahwahnee Row, Y Apartments, garage housing, and Hospital Row (43 employees).
  - Retain Tecoya Dorms (232 employees).
  - Construct new dormitory housing in the Lost Arrow parking lot (outside the corridor) for 87 employees.
- Provide housing for 104 employees at Yosemite Lodge.
  - Construct new housing for 104 employees at Yosemite Lodge (two structures with 26 double-occupancy units each).

Under Alternative 5 (Preferred), 1,100 parking spaces would be allocated for administrative uses (including parking spaces for residential areas).

An additional 160 concessioner employees working in Yosemite Valley would be housed in El Portal.

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 3 for Alternative 5 (Preferred) are included in "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

This alternative would provide for the same kinds and amounts of use that exist today. The majority of actions for Alternative 5 (Preferred) in Segment 3 are discussed in "Actions Common to Alternatives 2-6". Additional actions included in this alternative are described below.

Visitor Activities and Services

Under Alternative 5 (Preferred), private boating (likely kayaks) would be allowed in Segment 3. Boaters would be allowed on the river reach starting below Pohono Bridge (in Segment 2) through El Portal (Segment 4). Boaters would be allowed to put in and take out at any of the roadside pull-outs. This use would be restricted to 10 people per day. See Appendix R for additional information on equipment restrictions, open reaches, and put-in and take-out locations.

Transit Options

Public transit options along Segment 3 would be the same as those described for Segment 2.

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (see page 8-47), Alternative 5 (Preferred) would protect and enhance biological values as follows:

Biological Values

- **Abbieville and Trailer Village** - The riverbanks at Abbieville and Trailer Village would be protected with a 150-foot riparian buffer measured from the ordinary high-water mark of the Merced River. Riparian habitat within the buffer would be restored by removing unnecessary roads and parking, de-compacting soils, and planting native riparian and oak woodland species.

User Capacity, Land Use and Facilities Management

The majority of actions for Segment 3 are discussed in the "Actions Common to Alternatives 2-6". However, as discussed below, Alternative 5 would introduce additional visitor use to this segment and increase the amount of employee housing.

Visitor Activities and Services

Fifty private boaters per day would be allowed on the river in Segment 4. Boaters would be allowed to paddle the stretch of river from below Yosemite View Lodge to beyond the Foresta Bridge (at which point boaters would exit the segment). Boaters would be able to use put-ins and take-outs west of the hotel, at the store/gas station, and at the Red Bud launch site. See Appendix R for additional information on equipment restrictions, open reaches, and put-in and take-out locations.

Visitor Overnight Use

Forty campsites (some with RV hook-ups) would be incorporated into the redesign of the Abbieville/Trailer Village Area, adjacent to the new El Portal remote parking area. Campsites would be used for both visitor and administrative use (seasonal employee housing). A clear separation between the types of uses would be factored into the design. All redevelopment would be located outside of the 150-foot riparian buffer.

No lodging would be provided in Segment 4.

Visitor Day-use Parking Capacity

A new remote visitor day-use parking area, accommodating 300 vehicles, would be provided at the Abbieville site. The parking area would support day-use access to Yosemite Valley and be serviced by a Valley shuttle. Visitors using the El Portal remote parking area would be included as part of Segment 2 user capacity.

The total available day-use parking capacity in this segment would be 514 spaces: 214 spaces for visitors to El Portal and 300 remote parking spaces for visitors to Yosemite Valley.

Transit Options

As noted in the descriptions of Segment 2, public transit along the Highway 140 travel corridor would be expanded. Shuttle bus service from the El Portal remote parking area to Yosemite Valley would be provided during peak season. For a complete summary of the transit options along this corridor, see the Segment 2 summary above.

Administrative Activities

All administrative activities in Segment 4 are included in "Actions Common to Alternatives 2-6" (see page 8-47).

Employee Housing Capacity

Under Alternative 5 (Preferred), employee housing would be added to the El Portal Village Center (12 beds) in Rancheria Flat (130 beds), and in the disturbed footprint of Odger's bulk fuel storage facility after it is removed from the floodplain (18 beds). All new units would be located outside of the 100-year floodplain. These units would be added to replace housing removed from Yosemite Valley.

Employee and Administrative Parking Capacity

Most employee and administrative parking actions are discussed in "Actions Common to Alternatives 2-6" (page 8-47). Overnight parking for employees living in this segment would be provided at their residences.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

All actions for Segment 5 are described in "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

The majority of actions for Segment 5 are included in the "Actions Common to Alternatives 2-6". Additional actions included in Alternative 5 (Preferred) are described below.

Visitor Activities and Services

Private boating would be allowed in Segment 5. This use would generally consist of short floats, using boats that could easily be carried into this remote area. A maximum of 25 people per day would be allowed, and boating permits could be obtained in conjunction with the required wilderness permit. See Appendix R for additional information about equipment restrictions, open reaches, and put-in and take-out locations.

Visitor Day-use Capacity

Day-use parking for the trailheads that lead to this segment is provided in the Wawona area (see Segment 7, below). Other users may gain access to this segment from trailheads that originate in the Sierra National Forest. Use levels are typically very low.

Transit Options

Transportation options for reaching the trailheads that access Segment 5 are discussed under Segment 7.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

All actions for Segment 6 are included in the "Actions Common to Alternatives 2-6" (see page 8-47) and this segment will not be discussed further. For Segment 7, the following additional actions have been included in Alternative 5 (Preferred) to enhance cultural values and water quality in Segment 7:

Cultural Values/Water Quality

- **Stock Camp** – Two stock-use campsites would be moved away from an area with sensitive cultural resources to an upland location in the vicinity of the Wawona stables.
- **Wawona Campground** – Remove 13 sites that are located within 100 feet of the river or proximate to sensitive cultural resources.

User Capacity, Land Use and Facilities Management

Alternative 5 (Preferred) would provide for the same kinds and amounts of use that occur today in Wawona. The majority of actions to be taken in Segment 7 are discussed in the "Actions Common to Alternatives 2-6". Additional actions included in Alternative 5 (Preferred) are described below.

Visitor Activities and Services

A range of visitor recreation activities would continue to be available in Segment 7. River-related activities would include swimming, fishing and boating and other activities common to Alternatives 2-6. In addition, Alternative 5 (Preferred) includes the following actions:

- **Boating** – Boating would be limited to private use only with a maximum of 50 people per day. The open reach of the river would be from below the Swinging Bridge area to the Wawona Campground, excluding the Wawona impoundment.
- **Golfing** – Retain the Wawona Golf Course.
- **Tennis** – Retain the Wawona Hotel Tennis Court.
- **Wawona Commercial Stables** – Retain the stables and increase commercial horseback day rides, as appropriate.

Visitor Overnight Capacity

Under Alternative 5 (Preferred) the total overnight capacity for Segment 7 would be 190 units, accommodating up to 787 people per night.

The Wawona Campground capacity would be reduced slightly to 84 sites (including one group site), accommodating 528 people per night.

The two campsites at the Wawona stock camp would be relocated and would accommodate 6 people per night each (12 people per night total).

Transit Options

Under Alternative 5 (Preferred), transit options for Segment 7 would be expanded. Regional bus service, similar to that provided on the Highway 140 corridor, would be introduced. An estimated 12 runs per day would travel the Highway 41 corridor to Yosemite Valley during peak periods of the day. The Wawona area shuttle would continue to serve the South Entrance and the Mariposa Grove of Giant Sequoias. Concessioner-operated runs between Wawona and Yosemite Valley would be discontinued and replaced by the new transit service on the Highway 41 corridor.

Segment 8: South Fork Merced below Wawona (Wild Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 8 are described in "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 5 (Preferred) would provide for the same kinds and amounts of use that exist today in Segment 8. The majority of actions proposed for Segment 8 are discussed in "Actions Common to Alternatives 2-6". Additional actions included in Alternative 5 (Preferred) are described below.

Visitor Activities and Services

Private boating would be allowed in this segment. Generally, this activity would consist of short floats, with craft that can easily be carried into this remote area. Boating activity would be limited to 25 people per day and a permit would be issued for this use in conjunction with the wilderness permit required for camping. Please see Appendix R for additional information on equipment restrictions, open reaches, and put-in and take-out locations.

Transit Options

Transit services for access to this segment are described above, under Segment 7.

Summary of Changes between Draft and Final Plans

The following table provides a summary of the major revisions to the preferred alternative that resulted from public and agency comment on the draft environmental impact statement (DEIS). More information is included in the detailed description of the alternative.

TABLE 8-38: CHANGES TO ALTERNATIVE 5 (PREFERRED) BETWEEN DEIS AND FEIS

Segment	Action	Draft Preferred Alternative	Final Preferred Alternative
All	Total Restoration Acres	Ecologically restore 203 acres	Ecologically restore 189 acres
1	Merced Lake Meadow Grazing	No grazing capacity set	Establish grazing capacity of up to 58 stock-nights per season
1	Merced Lake High Sierra Camp Pack-stock Support	No limits identified	Establish a limit of 7.5 pack-strings per week for an average of 30 pack-strings per month for camp operations
1	Merced Lake High Sierra Camp Lodging	Remove 11 historic tents	Remove 11 tents and retain historic foundations
2A & 2B	User Capacity Management Program – Yosemite Valley	Limit user capacity to 18,150 people at one time, with an estimated daily visitation of 19,900 people	Implement the El Capitan Traffic Diversion to limit user capacity to18,710 people at one time, with an estimated daily visitation of 20,100 people
2A & 2B	Eagle Creek Campground (West Valley)	Construct 42 new campsites at Eagle Creek in West Valley	No new campgrounds proposed for West Valley
2A & 2B	Upper and Lower River Campgrounds	Provide 30 campsites at the site of the former Lower River Campground in East Valley	Provide 72 campsites at the site of the former Upper and Lower River Campgrounds in East Valley
2A & 2B	Private Boating	Allowed between Lower River and Sentinel Beach	Additional reaches open to private boating
2A	Commercial Rafting	No commercial rafting allowed	Commercial rafting allowed (50 boats at one time)
2A	Commercial Bike Rentals (Curry Village/Yosemite Lodge)	Remove commercial bike rentals	Move Curry Village and Yosemite Lodge bike rentals to locations outside the river corridor
2A	Commercial Raft Rentals in Yosemite Valley	Eliminate commercial raft rentals	Move raft rentals to a location outside the river corridor and limit operation to 100 boats per day
2A	Curry Ice Rink (CTA)	Remove Curry Ice Rink	Convert Curry Village Ice Rink to a temporary facility and locate it outside the river corridor in the Curry Village parking lot
2A	Historic Sugar Pine Bridge	Remove Sugar Pine Bridge	Retain Sugar Pine Bridge; conduct further hydrologic impact study to assess the merits of various long-term bridge management strategies
2A	Superintendent's House (Residence 1) & Garage	Move Superintendent's House and Garage to a location outside the river corridor	Remove Superintendent's House and Garage
2A	Swimming Pools	Remove swimming pools at the Ahwahnee and Yosemite Lodge	Retain all swimming pools
2A	Yosemite Lodge Pedestrian Underpass	Construct a pedestrian underpass west of the intersection of Northside Drive and Yosemite Lodge Road	Explore options for a grade-separated pedestrian crossing at Yosemite Lodge, with the final design be determined with tiered NEPA/NHPA compliance
2A	Yosemite Lodge Bus Loading & Unloading/Parking	Provide bus loading and parking area in area currently occupied by Highland Court; include 15 bus parking spaces in West of Lodge Parking Area	Provide bus loading and unloading parking area south of Lodge Registration Building and 22 bus parking spaces in West of Lodge Parking Area

TABLE 8-38: CHANGES TO ALTERNATIVE 5 (PREFERRED) BETWEEN DEIS AND FEIS

Segment	Action	Draft Preferred Alternative	Final Preferred Alternative
2A	Boys Town Guest Accommodations	Remove all historic canvas tents and non-historic without-bath-cabins; construct 98 new hard-sided cabin-with-bath units	Retain 50 historic canvas tents and 14 non-historic hard-sided without-bath-cabins; construct 52 new hard-sided cabin-with-bath units
2A	Curry Village Lodging Totals	Retain 453 lodging units	Retain 482 lodging units
2A	Huff House (West Curry Village Day-use Parking Area)	Provide 103 parking spaces	Provide189 parking spaces
2A	Yosemite Village Day-use Parking Area	Provide 850 parking spaces in an eight-acre area	Provide 750 parking spaces in a seven-acre area
2A	Concessioner General Office Relocation	Provide a total of 10,000 square feet of office space in the Concessioner Warehouse	Provide a total of 15,000 square feet of office space by expanding the Concessioner Warehouse
2A	Housekeeping Camp Store	Remove store	Retain store
2A	Huff House (Curry Village) Employee Housing	Remove temporary employee housing and construct permanent housing for 164 employees	Retain the historic Huff House and 10 tent cabins (20 beds)
2A	Lost Arrow Temporary Employee Housing (outside river corridor)	Remove temporary housing and construct permanent housing for 50 employees	Remove temporary housing and construct permanent housing for 87 employees
2B	West Valley Overflow Parking Area	Provide parking for 100 cars in new overflow parking area in West Valley	No new parking proposed for West Valley
3	Transit and Shuttles	El Portal Remote Parking Area assumed to be served by existing Highway 140 transit operations	El Portal Remote Parking Area serviced by shuttle to Yosemite Valley (seasonally available)
3	El Portal Employee Housing	Construct housing in Rancheria and Old El Portal to replace 96 beds removed from Yosemite Valley	Construct housing in Rancheria and Old El Portal to replace 160 beds removed from Yosemite Valley
3	Abbieville/Trailer Village	Establish 200-car parking lot in El Portal for Yosemite Valley day users	Establish 300-car parking lot in El Portal for Yosemite Valley day users and provide 40 campsites for public/administrative use in Trailer Village

Conceptual Site Drawings

Boys Town

Under Alternative 5 (Preferred), 48 of the existing 98 tent cabins at Boys Town would be removed and replaced with 52 permanent lodging units suitable for year-round accommodation. The historic Boys Town area, including 50 tent cabins and 14 cabins without-bath, would remain intact. The new units would consist of 16 duplex buildings and five 4-plex buildings, all with private baths. Also, 1,350 feet of pedestrian pathways would be added. The Curry Orchard Parking Area would be redeveloped using best management practices to provide a total of 415 parking spaces. The project area would encompass 8.4 acres and would include: approximately 22,000 square feet for new buildings; 25,800 square feet of utility trenching; 6,750 square feet for pedestrian pathways; and 23,400 square feet of new parking, for a total of 3.75 acres. Temporary construction staging would require approximately 1.4 acres and would likely take place within the existing Curry Orchard Parking Area.

Yosemite Village Day-use Parking Area

Under Alternative 5 (Preferred), the existing six-acre Yosemite Village Day-use Parking Area and all associated roadway improvements would be moved 150 feet north of the river's ordinary high-water mark to facilitate riparian restoration goals and to prevent further resource damage. Restoration actions would remove non-native fill material, re-contour the topography, and plant native vegetation. The redesigned parking area would be redeveloped to provide a total of 750 parking spaces and a new comfort station. Northside Drive would be realigned to the south edge of the parking area where it would connect with Sentinel Drive and continue west. A new three-way intersection would be constructed connecting Sentinel Drive with the re-routed Northside Drive and the shuttle bus road into the Village. This intersection would include turning lanes to minimize traffic delays and maintain proper traffic flow. Consolidating the parking to the north of Northside Drive, with new and improved walkways to Yosemite Village, would eliminate vehicle and pedestrian conflicts. A roundabout that would improve traffic flow would be constructed at the Village Drive/Northside Drive intersection. The Concessioner General Office, Valley Garage, and Art Activity Center (originally constructed as a bank building) would be removed, and the Village Sport Shop would be repurposed to serve as a visitor contact station.

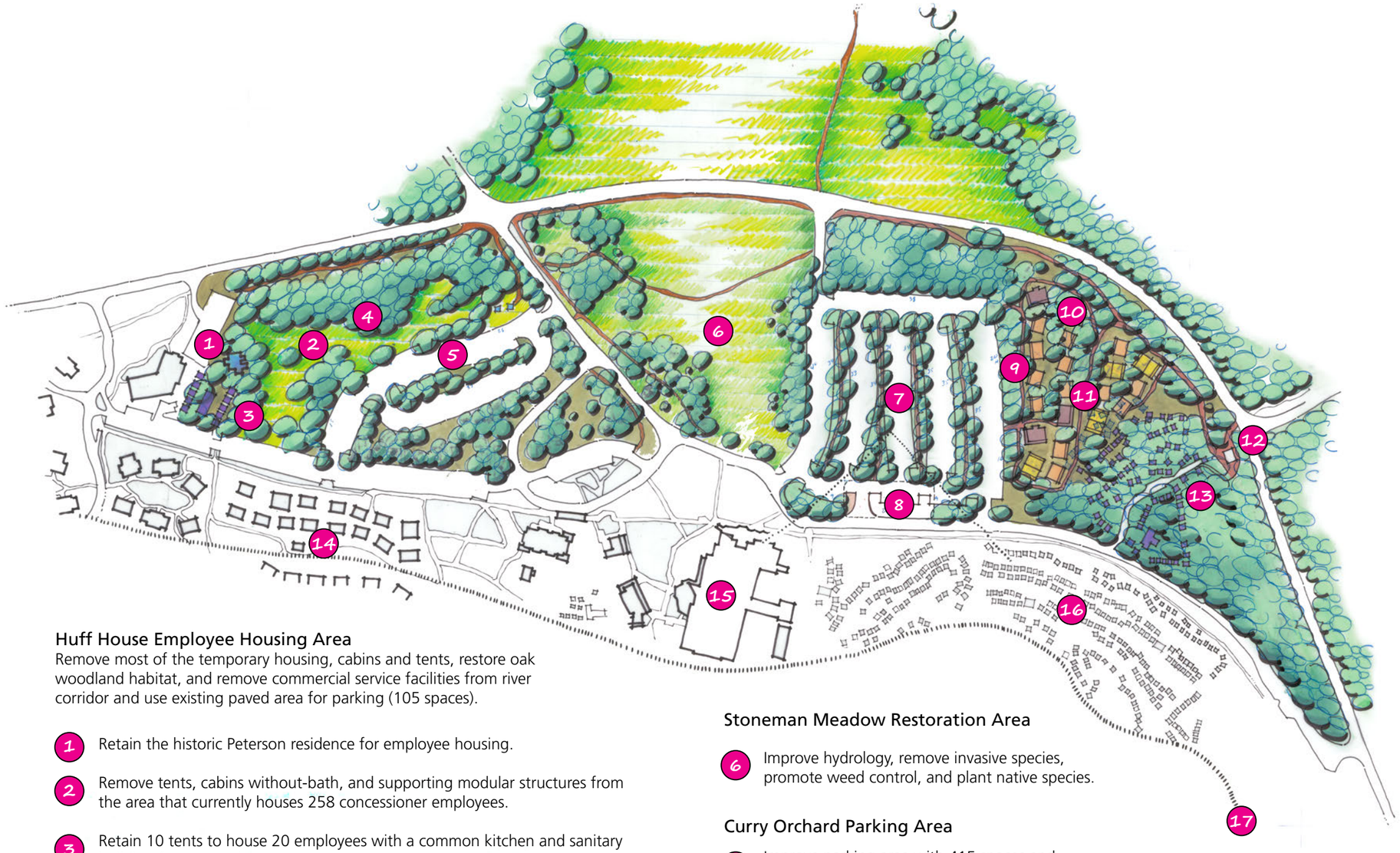
The project area for improvements at the Yosemite Village Day-use Parking Area in Alternative 5 (Preferred) would cover approximately 26 acres, most of which is currently developed, and would include: 1.2 acres for existing building removal; 4,000 square feet for the new comfort station; 5.4 acres of pavement removal; 2.3 acres of new roadway; 6.8 acres for new parking; 18,280 square feet of utility service trenching; and 50,070 square feet for new pedestrian pathways. Temporary construction staging would take place over a two-acre area within the existing footprint.

Yosemite Lodge Parking Area

In Alternative 5 (Preferred), an area west of Yosemite Lodge that is currently used as parking for tour buses, transit buses, and overnight guests would be redeveloped to provide 300 day-use parking spaces and parking for 22 buses. The Volunteers in Parks office would be removed, while linen storage and laundry buildings would be relocated to an addition to the food service building. The project area for improvements at Yosemite Lodge would cover approximately 15.9 acres, most of which is currently developed, and would include: 55,850 square feet of existing building and pavement removal; 17,300 square feet of utility service trenching; 3.6 acres for parking; and 5,000 square feet for pedestrian pathways. Temporary construction staging would take place over a two-acre area within the existing footprint. Existing vegetation would be retained to separate and screen parking bays, and bioswales would serve to filter and treat storm water run-off.

Yosemite Lodge Housing

Under Alternative 5 (Preferred), the temporary modular housing at Highland Court and the Thousands Cabins would be removed and replaced with two new buildings to house 104 concessioner employees. In addition, a new parking area would provide 78 employee parking spaces, parking for 3 shuttle buses, and 53 day-use parking spaces for the public. The project area for the two housing sites would cover a total of 7.4 acres, most of which is currently developed, and would include: 45,500 square feet of preparation for the new buildings; 5,500 square feet of utility service trenching; and 1.8 acres for parking.



Huff House Employee Housing Area

Remove most of the temporary housing, cabins and tents, restore oak woodland habitat, and remove commercial service facilities from river corridor and use existing paved area for parking (105 spaces).

1. Retain the historic Peterson residence for employee housing.
2. Remove tents, cabins without-bath, and supporting modular structures from the area that currently houses 258 concessioner employees.
3. Retain 10 tents to house 20 employees with a common kitchen and sanitary building for seasonal use.
4. Restore black oak woodland habitat and natural topography, de-compact soils, and plant or seed landscape. Protect area with temporary fencing as natural resources recover.
5. Relocate commercial services (ice rink, bicycle and raft rental stands and storage facilities) to areas outside the river corridor. Adapt the existing paved area for parking, adding 134 spaces to the 55 existing at this location.

Stoneman Meadow Restoration Area

6. Improve hydrology, remove invasive species, promote weed control, and plant native species.

Curry Orchard Parking Area

7. Improve parking area with 415 spaces and landscape buffers with trees and bioswales that will treat storm water run-off. Retain a representative sample of historic orchard trees, where possible.
8. Reserve 85-by-200-foot site for a seasonal ice rink installation, with refrigeration unit equipment shed (outside river corridor). Relocate historic ticket booth to this location.

Boys Town Guest Lodging

9. Remove 73 tent cabins currently in use for guest accommodations and concessions employee housing. Construct 16 duplex buildings containing 32 units, similar to the historic west Curry Village cabins.
10. Construct 5 four-plex cabins with-bath, containing 20 units.
11. Construct accessible pathways connecting all guest units and parking facilities.
12. Relocate campground reservation office from the northeast corner of the orchard parking area to a more prominent and accessible location.
13. Retain 50 tent cabins and 14 cabins without-bath in historic Boys Town configuration.

Existing Curry Village

14. Retain 65 existing lodging units located in 19 duplex cabins (38 units); 2 four-plex cabins (8 units); Stoneman Cottage (18 units); and Cabin 819, with other historic structures outside the rock-fall hazard area.
15. Retain existing Curry Pavilion.
16. Retain 301 tents in historic terraces.
17. Re-establish the Valley Loop Trail near the historic alignment along the base of talus slope.

NORTH

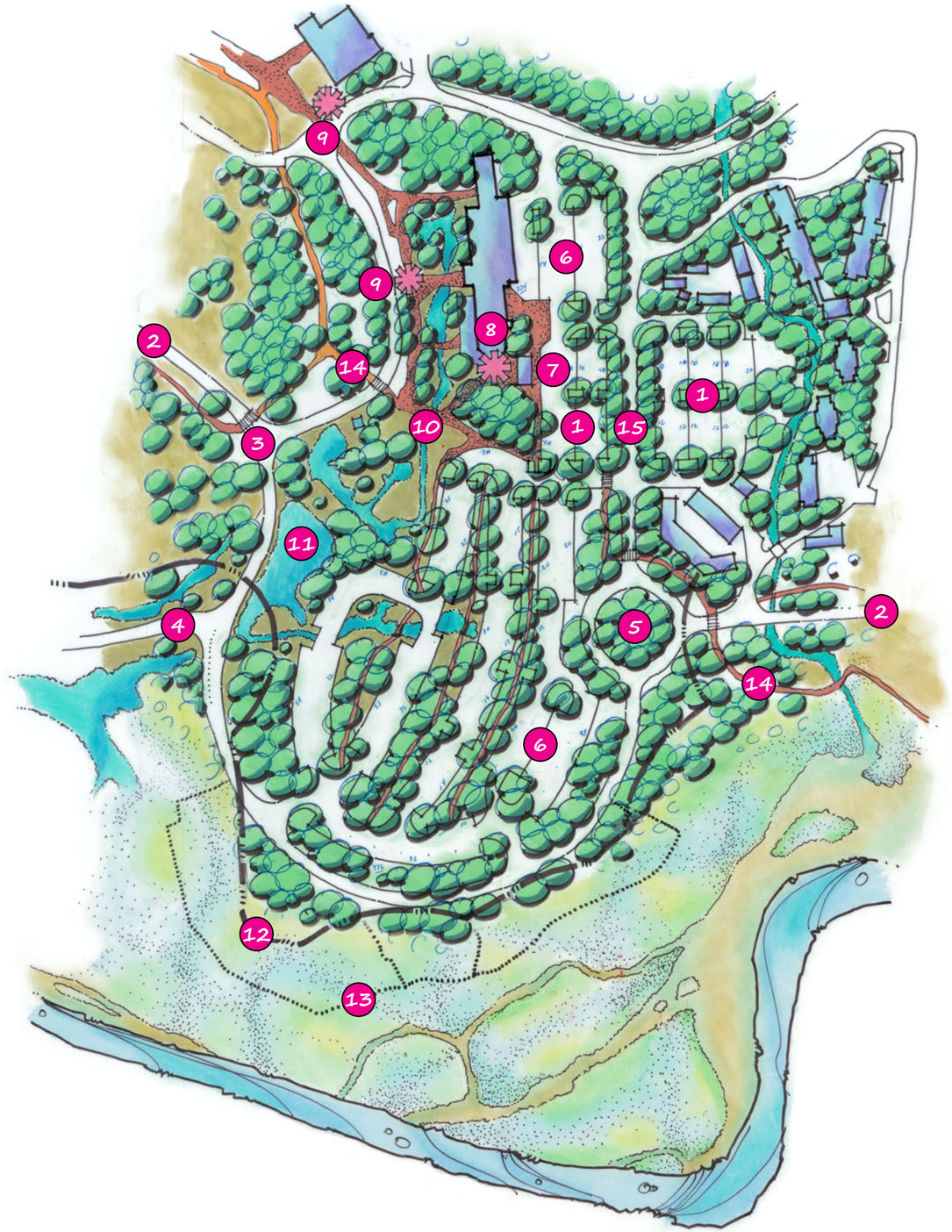
These drawings are intended to illustrate where facilities would be removed, relocated, or constructed according to actions more fully described by the project alternative. The drawings do not represent a final proposal. The precise locations of structures and other facilities are subject to change pending archaeological investigation prior to design or construction. More detailed design and construction documents would be developed consistent with the general concepts presented here.

Alternative 5
Conceptual Site Drawing for

Curry Village

Yosemite National Park
United States Department of the Interior • National Park Service

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1. Eliminate the Concessioner General Office and Garage located between the Village Store and employee housing areas to re-construct area as visitor parking.
2. Re-route Northside Drive to conform to the 150-foot riparian buffer. Consolidate all parking north of the roadway, minimizing pedestrian and vehicular conflicts.
3. Reconstruct Northside Drive and Visitor Center Loop Drive as a "T" intersection.
4. Re-align Sentinel Drive into a "T" intersection with a re-routed Northside Drive. Provide left-hand turn lanes off Sentinel Drive and Northside Drive.
5. Construct a roundabout to alleviate traffic congestion at the intersection of Northside Drive and Village Drive.
6. Provide 750 day-use spaces in a parking area that creates a sense of arrival with pedestrian pathways, wayfinding aids and landscape treatment. Provide landscaped areas to retain large numbers of trees, screen parking bays and bioswales that will treat storm water run-off.
7. Construct a park shuttle bus stop, covered shelter and comfort station.
8. Replace the Village Sport Shop with visitor contact station.
9. Retain existing shuttle bus stops on Visitor Center Loop Drive.
10. Eliminate existing Art Activity Center (bank building) and improve pedestrian access.
11. Protect and restore remaining wetlands and meadows, enhance wetlands and meadows in an integrated design and construction process.
12. Eliminate all parking from a 150-foot riparian buffer between Northside Drive and the Merced River reducing encroachment of existing day-use parking area on river corridor.
13. Dotted line represents existing day-use parking area limits.
14. Improve pedestrian connections and bike paths east and west of the day-use parking area.
15. Enhance Village Drive connection to Ahwahnee Drive by establishing a tree-lined roadway as a connection to day-use parking facilities and lodging.

NORTH

These drawings are intended to illustrate where facilities would be removed, relocated, or constructed according to actions more fully described by the project alternative. The drawings do not represent a final proposal. The precise locations of structures and other facilities are subject to change pending archaeological investigation prior to design or construction. More detailed design and construction documents would be developed consistent with the general concepts presented here.

Alternative 5
Conceptual Site Drawing for

Yosemite Village Day-use Parking Area

Yosemite National Park
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1. Through a subsequent planning process, evaluate alternatives that would reconstruct or relocate the pedestrian crossing at Northside Drive to eliminate or minimize pedestrian and vehicle conflict.

2. Maintain existing Yosemite Lodge guest lodging buildings, consisting of 245 rooms, swimming pool and parking areas (except where otherwise noted on this drawing).

3. Remove snack stand, bike rental stand and bike storage area from the river corridor.

4. Extend and improve existing tour bus loading and unloading area to accommodate 6 tour buses. Add 25 overnight parking spaces for lodge guests.

5. Enhance pedestrian circulation system.

6. Remove temporary employee housing structures from Highland Court, 82 beds. Return use of the existing paved area to prior parking purposes with 117 parking spaces.

7. Construct permanent employee housing in 2 two-story buildings with 52 occupants per building, provide 42 employee parking spaces per building.

8. Demolish and remove existing NPS volunteer office.

9. Relocate linen storage and laundry buildings from the 100-year floodplain to the food service building, as an addition or outbuilding. Reconfigure truck loading and unloading area.

10. Construct 300 visitor parking spaces and a comfort station in previously-disturbed lodge "annex" area. Maintain existing vegetation as buffers to separate and screen parking bays where possible. Provide pedestrian pathways and bioswales that will treat storm water run-off.

11. Construct 22 tour bus day-use parking spaces in previously disturbed area.

12. Construct 41 new parking spaces at Camp 4.

13. Retain 35 existing walk-in campsites at Camp 4. Construct 35 additional walk-in sites opposite existing parking facility.

14. Protect and enhance a 150-foot riparian buffer outside area of prior disturbance.

NORTH

Alternative 5
Conceptual Site Drawing for

Yosemite Lodge and Camp 4

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These drawings are intended to illustrate where facilities would be removed, relocated, or constructed according to actions more fully described by the project alternative. The drawings do not represent a final proposal. The precise locations of structures and other facilities are subject to change pending archaeological investigation prior to design or construction. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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ALTERNATIVE 6: DIVERSIFIED VISITOR EXPERIENCES AND SELECTIVE RIVERBANK RESTORATION

Overview

The guiding principles of Alternative 6 include limited restoration within 100 feet of the river and in meadow and riparian areas, infrastructure improvements to improve the visitor experience in Yosemite Valley, and expansion of facilities and services to accommodate growth in peak daily visitation.

Management actions in Alternative 6 would:

- Restore 176 acres of meadow and riparian habitat.
- Significantly increase the campsite inventory corridorwide (+46%) and in Yosemite Valley (+59%).
- Increase the lodging inventory in the recreational river segment in Yosemite Valley (+21%)
- Increase parking for Yosemite Valley day-use (+11%).
- Expand facilities and services to accommodate growth in visitation.
- Reduce traffic congestion and improve traffic circulation through infrastructure improvements such as roundabouts and grade-separated pedestrian crossings.
- Establish a user capacity of 19,920 people at one time for Yosemite Valley, with peak visitation estimated at 21,800 visitors per day.
- Continue to manage overnight-use capacity through wilderness quotas and reservation systems for lodging and camping.
- Manage day-use capacity for East Yosemite Valley by rerouting traffic at the El Capitan crossover prior to reaching established limits.

Visitors to Yosemite Valley would experience changes in circulation, parking, and transit that would reduce traffic congestion while providing for limited meadow and floodplain restoration. Visitors would experience a clear "sense of arrival" at a pedestrian-friendly parking area in Yosemite Village. These changes would be accomplished by moving parking away from the river and by redesigning the road and intersections at Yosemite Village to include two roundabouts. New parking areas would be provided in West Yosemite Valley and in El Portal, both linked to expanded shuttle service.

At Curry Village, all of the tent cabins at Boys Town would be removed and replaced with new duplex and 4-plex lodging units. The raft rental, ice rink, and bicycle rentals would be removed from their current locations and the services would be located outside of the river corridor. The food service, groceries, pool, and mountaineering shop would remain. Private boaters and those renting commercial rafts would still be able to raft or kayak in Yosemite Valley with additional reaches of the Merced River opened to boating. Cyclists would be able to ride bicycles in the Valley, with personal or rental equipment. Commercial horseback day rides would be discontinued; overnight stock trips to the backcountry would continue to operate out of the Concessioner Stables. Private stock use would continue to be allowed for rides in the front country and beyond. At Housekeeping Camp, some lodging units would be removed from the bed and banks of the river, the grocery store would be retained, and access to the beach and picnicking area would be improved.

Camping opportunities would be increased by adding a new walk-in campground east of Camp 4, a new campground near Eagle Creek in West Valley, and at the location of the former Lower and Upper River

campgrounds. Camping would continue to be provided at Lower Pines, Upper Pines, and North Pines. Additional lodging units would be provided at a redesigned Yosemite Lodge hotel complex. The bike rental, post office, and snack stand would be removed at Yosemite Lodge, while all food and retail services would remain. A new day-use parking area would be provided west of the lodge in an area currently used for bus parking and storage. A grade-separated crossing would be constructed to alleviate pedestrian and vehicle conflict at the intersection of Yosemite Lodge Road and Northside Drive.

Visitors to Wilderness in the Merced River corridor would continue to camp in designated backpackers campgrounds and all facilities would remain at the Merced Lake High Sierra Camp.

In Wawona, transit would be expanded with a new daily run from Fresno to Yosemite Valley along Highway 41. Lodging would remain available at the Wawona Hotel, with the golf course and tennis courts retained. The Wawona campground would be slightly reduced in size and commercial horseback day rides would no longer be available at the Wawona stables. Private boating would be allowed on the South Fork Merced.

Actions to Protect and Enhance River Values

Alternative 6 would protect and enhance river values through selective ecological restoration of riverbanks and riparian and meadow habitat corridorwide. This alternative would ecologically restore the area of Housekeeping Camp that is within the ordinary high-water mark of the river and would remove campground development within 100 feet of the river. Hydrologic connectivity of meadows to the riparian floodplain would be enhanced through engineering and design treatments, such as installation of large box culverts and permeable subgrades to improve surface water flow. Alternative 6 would also include a valley oak habitat protection area in El Portal.

All historic bridges would be retained. Hydrologic processes would be enhanced by increasing channel complexity through the installation of constructed log jams, strategic placement of large wood, removal of riprap, and bioengineering of the riverbank. If riparian condition and hydrologic function did not improve over time, more aggressive management actions would be considered, potentially resulting in bridge removal.

Cultural and scenic values would be protected and enhanced as described under "Actions Common to Alternatives 2-6" (beginning on page 8-47). Recreational values would be protected and enhanced by dispersing boating along the river through Yosemite Valley and by reducing traffic congestion. User Capacity, Land Use and Facilities Management

Alternative 6 would focus on providing diverse visitor experiences and allow for a slight increase in peak visitor use levels. It would provide the highest level of camping opportunities in Yosemite Valley and expand lodging facilities (see Table 8-40). Proper infrastructure design and site delineation in high-use areas would be incorporated to ensure the long-term protection of river values.

Table 8-39 provides a summary of the action unique to Alternative 6 that would protect and enhance river values.

User Capacity, Land Use and Facilities Management

Alternative 6 would focus on providing diverse visitor experiences and allow for a slight increase in peak visitor use levels. It would provide the highest level of camping opportunities in Yosemite Valley and

expand lodging facilities (see Table 8-40). Proper infrastructure design and site delineation in high-use areas would be incorporated to ensure the long-term protection of river values.

TABLE 8-39: ADDITIONAL ACTIONS TO PROTECT AND ENHANCE RIVER VALUES, ALTERNATIVE 6

Ecological Restoration Actions (Free Flow, Water Quality, Geological/Hydrological, and Biological Values)	
Corridorwide	
Ecological Restoration Acreage	176 acres (common to all, refer to Appendix E for specific locations)
Riprap to be Removed	6,048 linear feet: 5,700 linear feet (common to all) plus an additional 348 feet to be bioengineered (refer to Appendix E specific locations)
Segment 2: Yosemite Valley	
Free Flow / Geological /Hydrological Values	▪ Retain all historic bridges. Improve riverbank condition by increasing channel complexity through installation of constructed log jams, strategic placement of large wood, removal of riprap, and bioengineering of the riverbank. If riparian condition and hydrologic function did not improve over time, more aggressive management actions would be considered, potentially resulting in bridge removal.
Riparian Buffer / Floodplain	▪ Ecologically restore part of Housekeeping Camp within the ordinary high-water mark of the river. ▪ Ecologically restore portions of Backpackers Campground, North Pines Campground, and Lower Pines Campground. ▪ Ecologically restore 19.7 acres of habitat in the Upper and Lower River Campgrounds area and construct new campsites 150 feet away from the river. ▪ Move Yosemite Village Day-use Parking Area parking north at least 150 feet away from the river.
Recreational Values	▪ Reduce traffic congestion with improvements to the transportation system and the design and location of day-use parking.

Visitor Activities and Services

Under Alternative 6, although some commercial services would be eliminated, lodging and camping opportunities would be expanded and diversified. Changes to services include removing redundant retail outlets and snack stands and eliminating commercial horseback day rides in Yosemite Valley. The three swimming pools in Yosemite Valley would be retained. Raft and bike rental operations would be moved to locations outside of the river corridor. The ice skating rink would be moved to a location outside of the river corridor and operated as a temporary seasonal facility.

TABLE 8-40: USER CAPACITIES BY USE TYPE AND LOCATION – ALTERNATIVE 6

User Capacities by Use Type and Location		Alt 1 (No Action)		Alt 6	
	Unit Type	Units	People	Units	People
Wilderness Above Nevada Fall					
Visitor Overnight Use	Zone Capacities & Beds	380	380	380	380
Visitor Day Use	Day Hikers	350	350	350	350
Employee Housing (in camps)	Employee Beds	15	15	15	15
Administrative Day Use	Day Patrols	5	5	5	5
Yosemite Valley					
Visitor Overnight Use	Rooms & Campsites	1,500	6,564	1,987	9,006
Visitor Day Use	Parking Spaces	-	11,727	-	9,449
Employee Housing	Employee Beds	1,315	1,315	1,136	1,136
Administrative Day Use	Parking Spaces	166	332	166	332
Merced Gorge					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	180	869	180	869
Employee Housing	Employee Beds	9	9	9	9
Administrative Day Use	Parking Spaces	2	4	2	4
El Portal					
Visitor Overnight Use	Rooms & Campsites	-	-	-	-
Visitor Day Use	Parking Spaces	214	740	414	740
Employee Housing	Employee Beds	220	427	488	689
Administrative Day Use	Parking Spaces	610	1,220	610	1,220
South Fork Above Wawona					
Visitor Overnight Use	Permits	20	20	20	20
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1
Wawona					
Visitor Overnight Use	Rooms & Campsites	203	865	190	787
Visitor Day Use	Parking Spaces	-	1,295	-	1,606
Employee Housing	Employee Beds	121	121	121	121
Administrative Day Use	Parking Spaces	30	60	30	60
South Fork Below Wawona					
Visitor Overnight Use	Overnight Hikers	-	-	-	-
Visitor Day Use	Day Hikers	6	6	6	6
Employee Housing	Employee Beds	-	-	-	-
Administrative Day Use	Day Patrols	1	1	1	1

Visitor Overnight Capacity

Camping

Under Alternative 6, the campsite inventory in the Merced Wild and Scenic River corridor, including Yosemite Valley, would be increased by approximately 59%. All campsites within 100 feet of the river would be removed. Under Alternative 6, the total number of campsites in Yosemite Valley would increase to 739—a net gain of 273 sites. The total number of campsites available in the corridor would be 825. Table 8-41 provides a summary of the proposed changes to camping.

TABLE 8-41: CAMPING FACILITIES – ALTERNATIVE 6

Existing Locations	Alt 1 (No Action)	Alt 6	Details
Backpackers	25 sites	10 sites	15 walk-in sites within 100 feet of river relocated to a less sensitive area outside 100-year floodplain
Camp 4	35 sites	35 sites	No change to this National Historic Register Site
Lower Pines	76 sites	71 sites	5 sites removed from within 100 feet of the river
North Pines	86 sites	72 sites	14 sites removed from within 100 feet of the river
Upper Pines	240 sites	238 sites	2 sites removed for archeological resource concerns
Yellow Pine Administrative	4 sites	4 sites	No changes to these group administrative sites
Wawona Campground	99 sites	86 sites	13 sites removed within 100 feet of river or in culturally sensitive areas
Total Existing Locations	565 sites	516 sites	
New Locations	**Alt 1**	**Alt 6**	**Details**
West of Backpackers	0 sites	16 sites	16 walk-in sites relocated from Backpackers Campground outside 100-year floodplain
East of Camp 4	0 sites	35 sites	35 walk-in sites constructed in area east of Camp 4
Upper Pines	0 sites	87 sites	36-site RV loop and a walk-in campground with 49 sites and 2 group sites constructed
Upper River	0 sites	32 sites	30 walk-in and 2 group sites created 150 feet from river in the former footprint of the Upper River Campground impacted by the 1997 flood
Lower River	0 sites	40 sites	40 walk-in sites created 150 feet from the river in the former footprint of Lower River Campground
Yosemite Lodge	0 sites	20 sites	20 RV sites west of lodge and adjacent to parking area
Eagle Creek	0 sites	79 sites	79 car & RV sites added east of El Capitan Picnic Area
Total New Camping	0 sites	309 sites	
Total Camping in Corridor	565 sites	825 sites	

Lodging

Under Alternative 6, the availability of in-park lodging availability would increase 18% relative to current conditions. Management actions related to lodging would focus on the removal of lodging from within the ordinary high-water mark at Housekeeping Camp and either the maintenance or increase in lodging capacities at other locations. Canvas tent cabins would be replaced with permanent lodging in Curry Village to increase the availability of year-round accommodations. Yosemite Lodge would be redeveloped outside of the 100-year floodplain with new three-story lodging structures to provide a total of 440 units. As a result of these actions, the in-park lodging inventory would be increased from 1,160 units to 1,374 units. Table 8-42 provides a summary of the proposed changes to lodging.

Parking Inventory and Access Improvements

Under Alternative 6, parking for Yosemite Valley day use would increase by 11%, with the provision of remote parking lots in West Valley and El Portal. The total number of day-use parking spaces available for all river segments would be as shown in Table 8-43 .

TABLE 8-42: LODGING FACILITIES – ALTERNATIVE 6

Wilderness	Alt 1 (No Action)	Alt 6	Details
Merced Lake High Sierra Camp	22 units (60 beds)	22 units (60 beds)	No change to this Wilderness lodging facility
Yosemite Valley	**Alt 1**	**Alt 6**	**Details**
Ahwahnee Hotel	123 rooms	123 rooms	No change at this National Historic Landmark
Housekeeping Camp	266 units	232 units	Remove 34 units out of the ordinary high-water mark (bed and banks of the river)
Curry Village	400 units	453 units (290 canvas tent cabins and 163 hard-sided units)	Retain 290 canvas tent cabins Retain 18 units at Stoneman House Retain 47 cabin-with-bath units. Construct 98 hard-sided units in Boys Town
Yosemite Lodge	245 rooms	440 rooms	Construct a new three-story lodging structures with 440 units located outside the 100-year floodplain
Wawona	**Alt 1**	**Alt 6**	**Details**
Wawona Hotel	104 rooms	104 rooms	No change at this National Historic Landmark
Total Lodging in Corridor	1,160 units	1,374 units	

TABLE 8-43: NUMBER OF DAY-USE PARKING SPACES IN SEGMENTS – ALTERNATIVE 6

Location	Alt 1 (No Action)	Alt 6
Segment 2: Yosemite Valley	2,337 spaces	2,398 spaces
Segment 3: The Gorge	180 spaces	180 spaces
Segment 4: El Portal	214 spaces	414 spaces*
Segment 7: Wawona	290 spaces	290 spaces
Total Parking	3,021 spaces	3,282 spaces

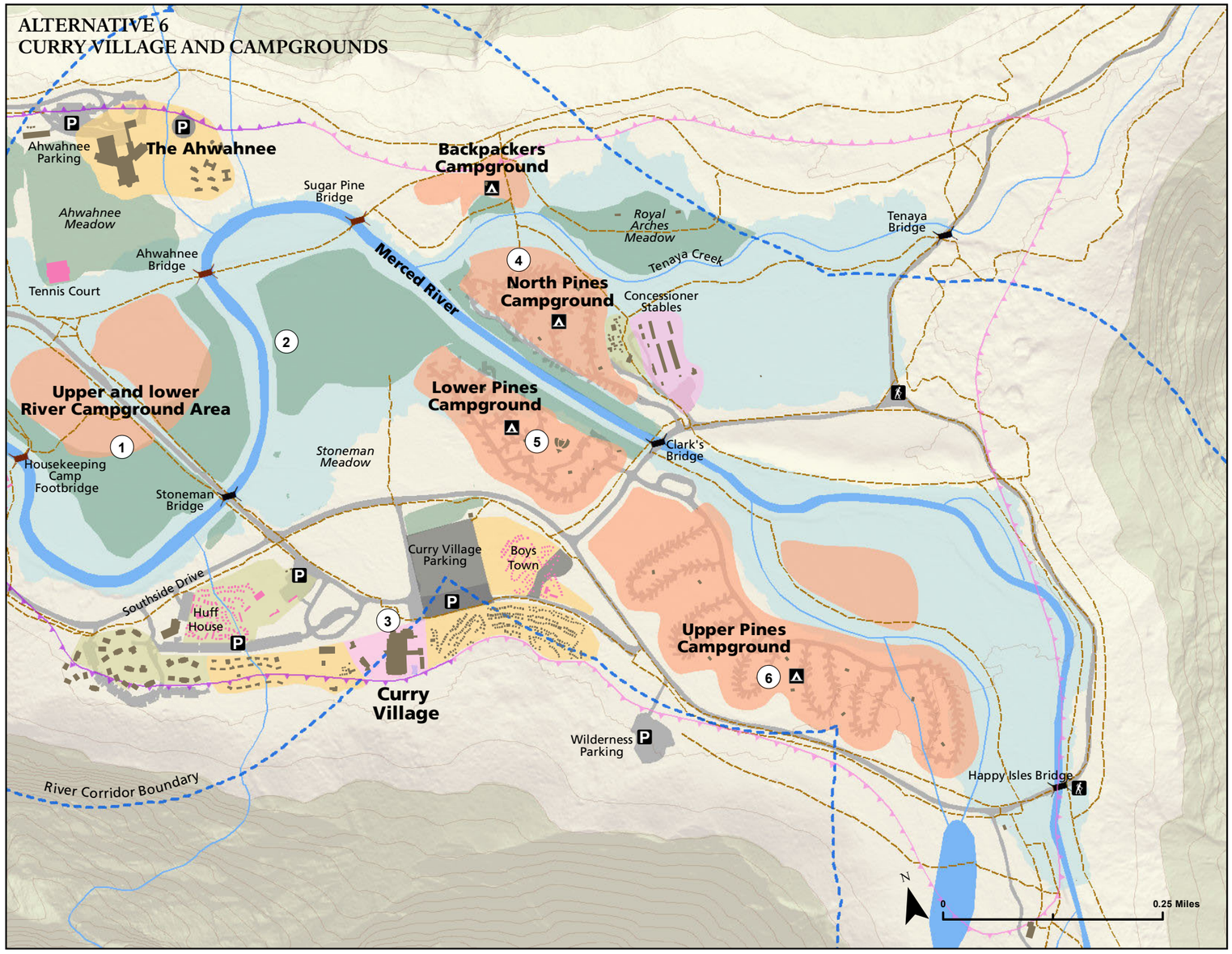
NOTE:

* 200 new El Portal spaces are located in the Abbieville Remote Parking area. While these spaces are located in El Portal and are therefore counted as part of the parking inventory of Segment 4, most of the use associated with these spaces will occur in the Yosemite Valley.

The most significant changes to parking and circulation would take place in the vicinity of Yosemite Village Day-use Parking Area, Yosemite Lodge, West Valley, and El Portal. The Yosemite Village Day-use Parking Area would be redesigned to provide 750 parking spaces. A new day-use parking area with a total of 300 parking spaces would be constructed west of Yosemite Lodge. Overflow parking during times of peak visitation would be provided in West Valley (250 parking spaces) and in El Portal at Abbieville (200 parking spaces). The ***total*** parking inventory in East Yosemite Valley (including day, overnight, and administrative use) would be approximately 5,350 spaces. Including the remote parking lots provided in West Valley and El Portal, a total of 5,800 parking spaces would be provided for visitor and administrative access to Yosemite Valley.

Under Alternative 6, regional transit options and shuttle services would be expanded and optimized. The NPS shuttle system would also be expanded to serve locations in West Yosemite Valley, including Bridalveil Fall and the West Valley Overflow Parking Area.

ALTERNATIVE 6: DIVERSIFIED VISITOR EXERIENCES AND SELECTIVE RIVERBANK RESTORATION



Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Lakes
- Stream
- Contour
- Trails
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Surfaced Areas
- Restoration Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

EAST YOSEMITE VALLEY: CURRY VILLAGE AND CAMPGROUNDS

(1) Upper and Lower River Campground
- New Lower River Campground: Construct a new campground 150 feet away from the river with 40 walk-in sites. Provide picnic tables and parking for day use and directed river access to the Housekeeping Camp eastern beach. Restore hydrologic processes in the southeast portion of the area.
- New Upper River Campground: Construct a new campground 150 feet away from the river with 30 walk-in sites and 2 group sites. Restore hydrologic processes in the southeast portion of the area.
- Restoration: Restore 19.7 acres of floodplain. Protect the riverbank from trampling by fencing sensitive areas.

(2) River Reach Between Bridges
- Ahwahnee and Sugar Pine Bridges: Retain both Ahwahnee and Sugar Pine bridges. Mitigate effects of bridge to ensure free-flowing condition through engineered solutions: Improve channel complexity by installing constructed log jams. Deposit large wood below Sugar Pine Bridge. Fill in the existing cut off channel before the Sugar Pine Bridge.
- Stoneman Bridge: Mitigate effects of bridge to ensure free-flowing condition through engineered solutions: place large wood to lessen scouring, and use brushlayering and a constructed log jam. Add culverts along Northside Drive.

(3) Curry Village Area
- Lodging: Total would be 453 guest units, including: 290 tents in Curry Village retained; 98 hard-sided units constructed in Boys Town; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.
- Curry Orchard Parking Area: Provide 430 parking spaces through a re-design of the parking lot that uses best management practices to protect water quality. Also, apply engineering solutions to promote water flow and to increase drainage to Stoneman Meadow. Remove apple trees to mitigate human-bear interactions and plant native vegetation.
- Facilities and Services: Relocate ice rink to parking area outside of the river corridor and retain this seasonal activity. Relocate the bicycle and raft rental services outside of the wild and scenic river corridor.
- Huff House Housing: Remove temporary housing at Huff House. Construct 16 buildings, housing 164 employees, using the same dormitory prototype.
- Curry Village Day-use Parking: Within the existing disturbance footprint at the Curry Village Ice Rink area, provide visitor day-use and employee commuter parking for 105 vehicles.

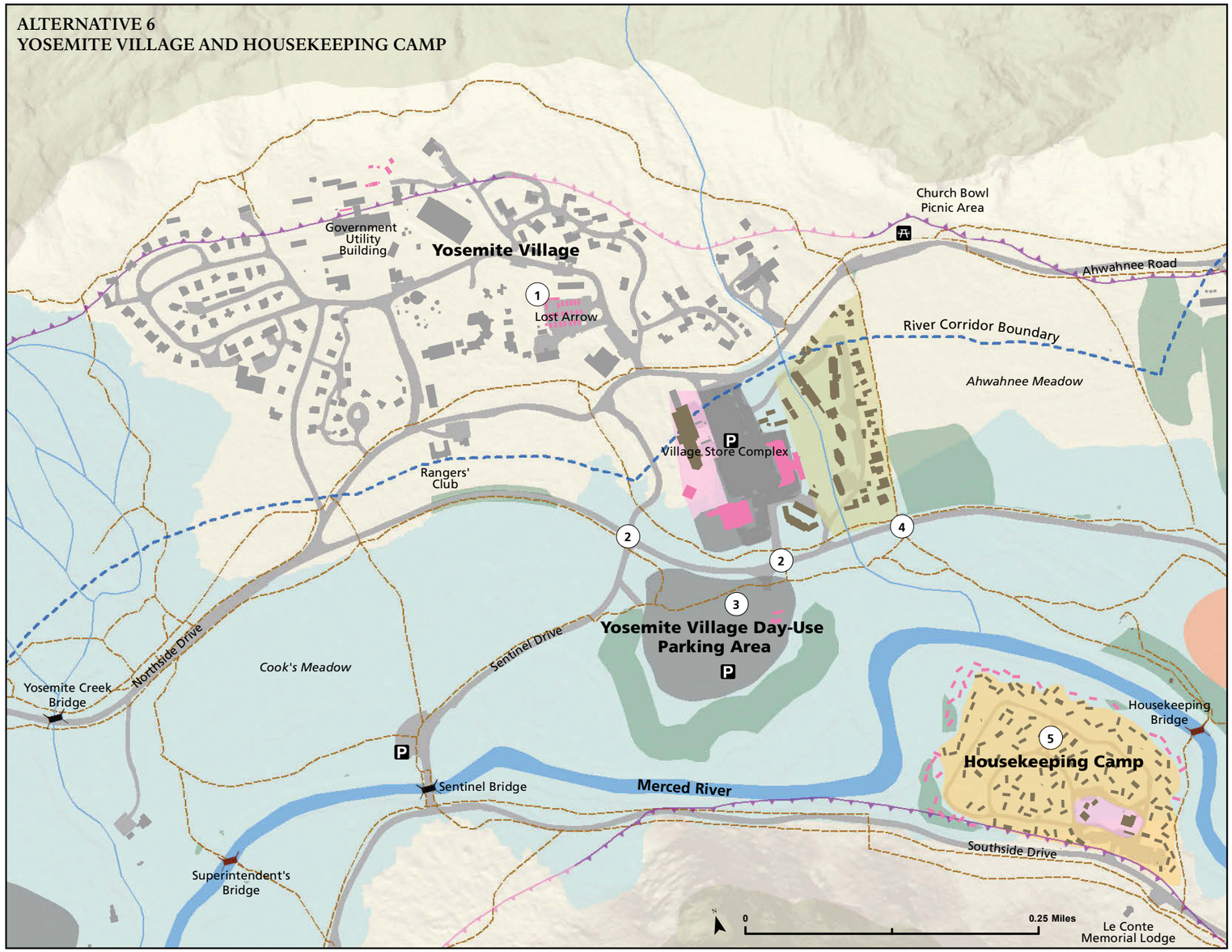
(4) Lower Pines Campground Area
- Campground Sites: Retain 71 campsites and remove five sites from within 100 feet of river. Restore native plant communities in riparian area.

(5) North Pines Campground Area
- North Pines Campground: Retain 72 campsites. Remove 14 sites from within 100 feet of river. Designate a formal river access point and restore native plant communities.
- Backpackers Campground: Retain 10 walk-in sites. Remove 15 walk-in sites within the 100-foot riparian buffer to be replaced by 16 walk-in sites west of Backpackers Campground.
- Concessioner Stables in Yosemite Valley: Retain the stables only to support the operation of the Merced Lake High Sierra Camp. Retain the kennel service. Retain associated housing (49 beds).

(6) Upper Pines Campground Area
- Campground Sites: Retain 238 campsites. Remove two sites from sensitive resource area.
- New RV Loop: Construct a new campground loop with 36 RV sites.
- New Walk-in Campground: Construct a new walk-in campground with 49 sites and two group camping sites.

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ALTERNATIVE 6: DIVERSIFIED VISITOR EXERIENCES AND SELECTIVE RIVERBANK RESTORATION



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- Scenic Segment

EAST YOSEMITE VALLEY: YOSEMITE VILLAGE AND HOUSEKEEPING CAMP

1. Lost Arrow: Replace temporary employee housing with permanent housing units for 50 beds.

2. Roadway Intersections
   - Sentinel Drive and Northside Drive: Construct a roundabout at Sentinel Road and Northside Drive (the "Bank 3-Way" intersection) to reduce vehicle congestion and improve traffic circulation.
   - Yosemite Village Day-use Parking Area: Construct a roundabout at Village Drive and Northside Drive to reduce vehicle congestion and improve circulation. Construct a pedestrian underpass beneath Northside Drive to minimize conflict between pedestrians and motorists. Add three-way intersection at Sentinel Drive and the entrance to the parking area to improve traffic flow and alleviate congestion at nearby intersections.

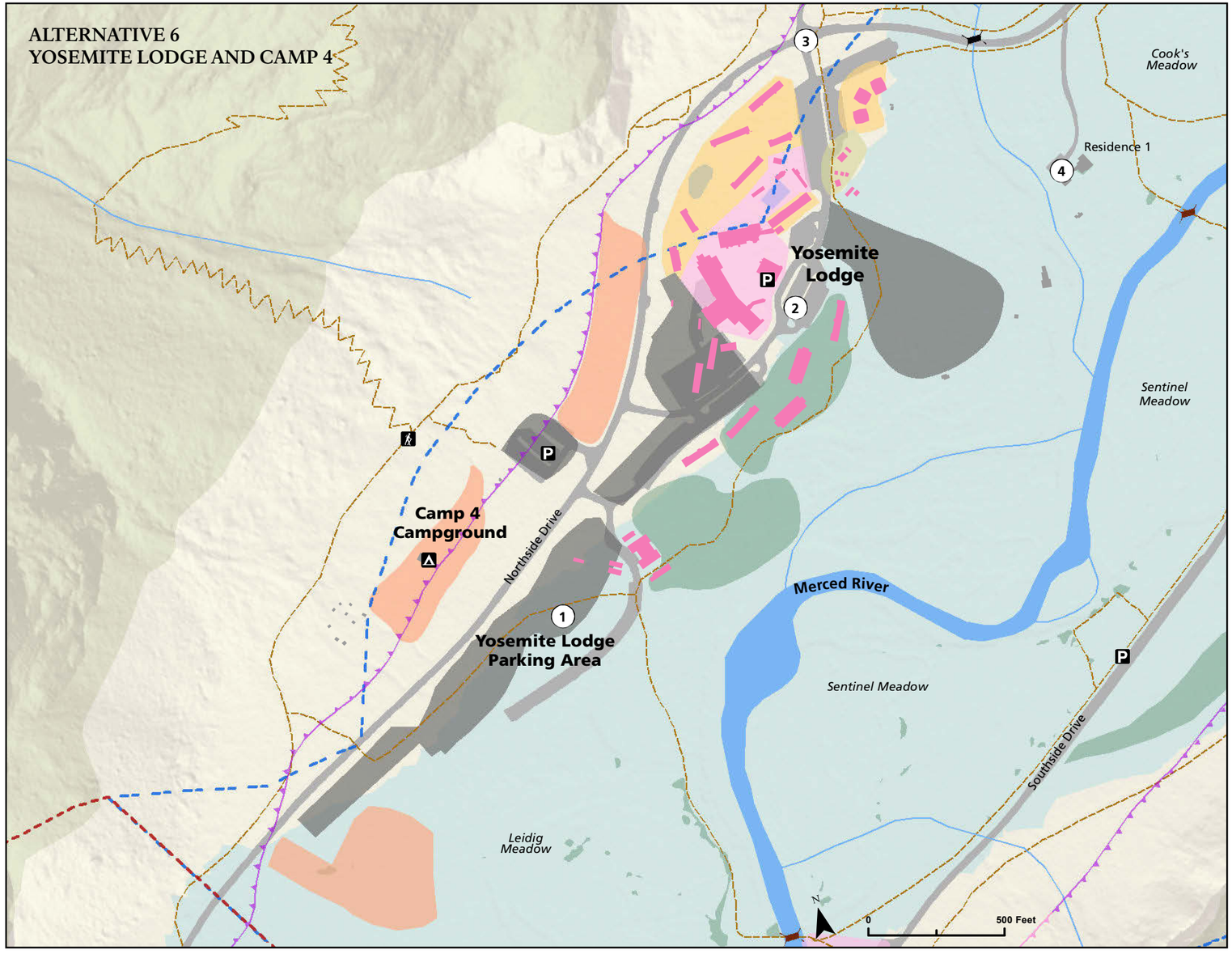
3. Yosemite Village Day-use Parking Area
   - Yosemite Village Day-use Parking Area: Move the parking area northward 150 feet away from the river to facilitate riparian restoration goals. Using best management practices to protect water quality, formalize the parking area with 850 parking places by re-developing part of the current administrative footprint as parking.

4. Indian Creek and Ahwahnee Meadow
   - Concessioner Employee Housing: Create a 50-foot setback from Indian Creek. Ecologically restore the riparian habitat, and protect using restoration fencing. Retain Ahwahnee Row and Tecoya employee housing.
   - Ahwahnee Meadow Restoration: Retain Northside Drive and bike path but increase culverts to improve hydrologic connectivity of the meadow. Replace 350 feet of trail with boardwalk to protect wetlands.

5. Housekeeping Camp
   - Housekeeping Camp Lodging: Retain 232 lodging units, and remove 34 lodging units (17 buildings) out of the ordinary high water mark. Retain Housekeeping Camp shower houses, restrooms, laundry, and grocery store.

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ALTERNATIVE 6: DIVERSIFIED VISITOR EXERIENCES AND SELECTIVE RIVERBANK RESTORATION



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EAST YOSEMITE VALLEY: YOSEMITE LODGE AND CAMP 4

(1) West of Yosemite Lodge
- Parking: Redevelop disturbed area southwest of Yosemite Lodge to provide an additional 300 day-use parking spaces. This includes 15 spaces for tour bus parking. Parking redevelopment will incorporate best management practices to protect water quality.
- RV Camping: Construct 20 RVs sites adjacent to proposed parking.

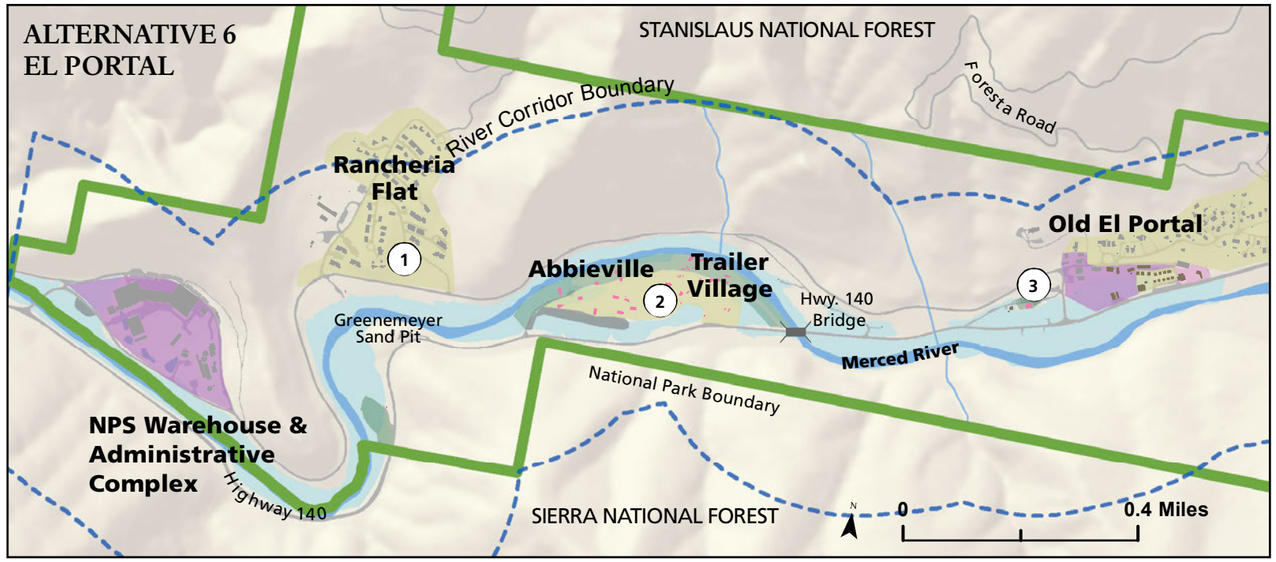
(2) Yosemite Lodge
- Lodging: Construct 4 new 3-story lodging structures with a total of 440 units to achieve pre-1997 flood number of guest rooms. Redesign the entire lodging facility to avoid the 100-year floodplain.
- Tour Buses: Remove temporary housing complex at Highland Court and establish a tour bus drop-off area with three bus loading spaces.
- Services and Facilities: Retain Yosemite Lodge Food Court and Mountain Room bar and dining service. Retain swimming pool facility. Relocate bike rental facility outside the river corridor. Re-purpose convenience shop and nature shop. Relocate Yosemite Lodge maintenance. Remove Yosemite Lodge post office, snack stand, employee housing (called Thousands Cabins), Highland Court employee temporary housing, and the NPS Volunteer Office.
- Site Restoration: Remove four existing hotel buildings from the 100-year floodplain, decompact underlying soils, re-contour topography (using 1919 maps as a guide) and plant native vegetation (3.3 acres restored).
- Yosemite Lodge Parking: Create gravel parking area for the redesigned Yosemite Lodge with space for 395 cars.
- Yosemite Lodge Concessioner Housing: Remove housing at the "Thousands Cabins" and temporary housing at Highland Court. Replace with two new concessioner housing areas to accommodate 104 employees. Construct 78 employee parking spaces to serve new housing.

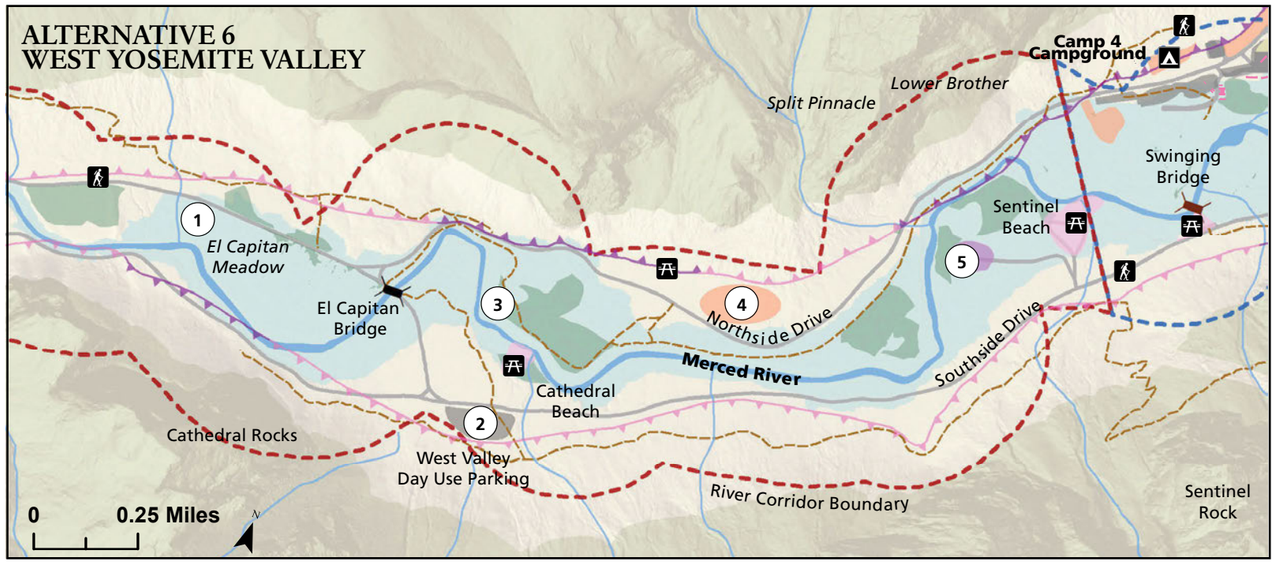
(3) Yosemite Falls Intersection
- A tiered NEPA / NHPA compliance effort will evaluate a range of alternatives to address the pedestrian / vehicle conflicts and traffic congestion at this intersection. The grade-separated crossing that is selected will include design guidelines to ensure that archeological impacts are avoided or minimized, the safety of pedestrians is maximized, and visual impacts are minimized.

(4) Residence 1
- Residence 1: Rehabilitate the historic structure, also know as the Superintendent's House, in its existing location to preserve the historic fabric while preparing the structure to withstand periodic flooding. The rehabilitation will follow the Secretary of Interior's Standards for the Treatment of Historic Properties and the Historic Structures Report. Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.

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ALTERNATIVE 6: DIVERSIFIED VISITOR EXERIENCES AND SELECTIVE RIVERBANK RESTORATION





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- Recreational Segment
- Wild Segment
- Scenic Segment

EL PORTAL

1. Rancheria Flat
   - Employee Housing: To replace temporary housing that will be removed from Yosemite Valley, construct three dormitories, with 12 employees each, and eight dwelling units for additional employees for a total of 44 employee beds, away from sensitive resources.

2. Abbieville and Trailer Court
   - Abbieville and Trailer Village Housing: Construct high-density housing outside the 100-year floodplain for 258 employees. Remove or relocate 36 existing private residences.
   - El Portal Remote Visitor Parking: Construct a new visitor parking facility with 200 spaces. Transportation service will be provided by regional transit. Parking redevelopment will incorporate best management practices to protect water quality.

3. El Portal Village Center
   - Valley Oak Restoration: Restore the rare floodplain community of valley oaks in Old El Portal through implementation of best management practices. Create a valley oak recruitment area of 1 acre in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including the adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.
   - Odger's Fuel Storage Facility: Remove bulk fuel storage facility, all associated development, and non-native fill from the floodplain. Decompact soils, and plant appropriate native plant species, including valley oak. Relocate the fuel storage area outside the Merced River corridor or find an alternate source for emergency fuel supplies.

WEST YOSEMITE VALLEY

1. El Capitan Meadow Area
   - Restoration of Informal Trails: Restore all informal trails in meadow to natural conditions. Use restoration fencing to prohibit all foot traffic into meadow, including the southern perimeter and designate all meadow access using boardwalks and viewing platforms. Selectively remove mature conifers that block views of El Capitan from the roadside.

2. West Valley Day-use Parking
   - Day-Use Parking: Develop a West Valley Day-use Parking area on the south side of Southside Drive, at the intersection of El Capitan Crossover, with 250 parking spaces. Parking development will incorporate best management practices to protect water quality. Expand Yosemite Valley shuttle service to West Valley locations.

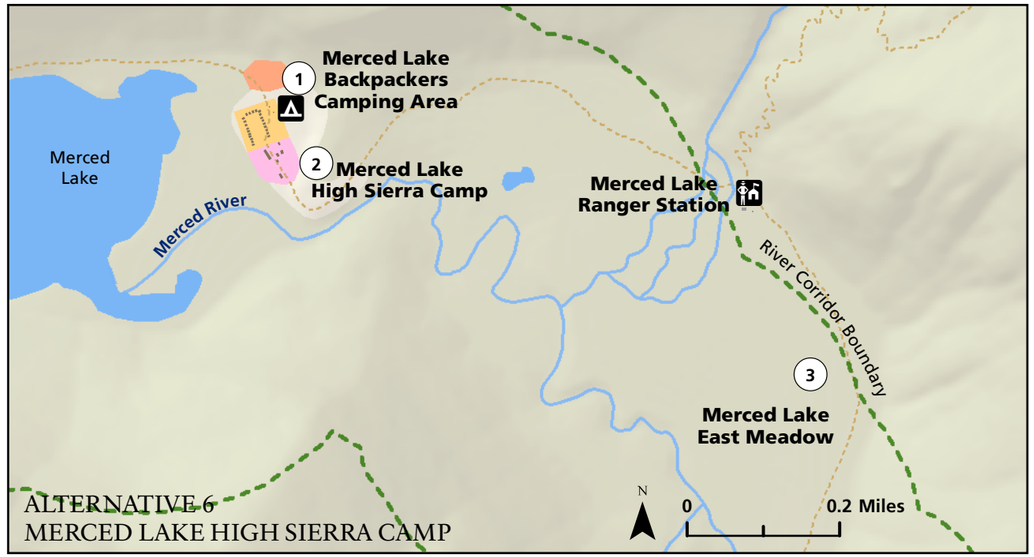
3. Valley Loop Trail
   - Re-Route: Move portions of the Valley Loop Trail out of sensitive areas; this includes the 780 feet of the trail through Bridalveil Meadow. Construct boardwalks through wet meadow habitat in Slaughterhouse Meadow.

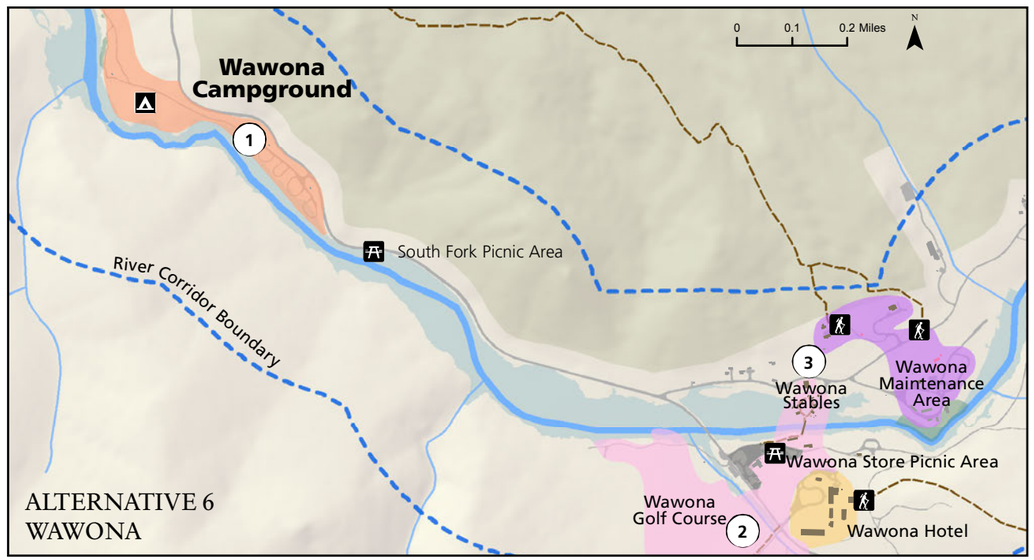
4. Eagle Creek Campground
   - New Campground: Construct campground with 79 car and RV sites located east of El Capitan Picnic Area.

5. Yellow Pine Campground
   - Administrative Use Campground: Retain Yellow Pine's four group sites (serving up to 120 people) for administrative use.

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ALTERNATIVE 6: DIVERSIFIED VISITOR EXERIENCES AND SELECTIVE RIVERBANK RESTORATION





Legend

- Campgrounds
- Picnic Area
- Parking Area
- Trailheads
- Road bridge
- Footbridge
- Calculated Rock-fall Hazard Line
- Inferred Rock-fall Hazard Line
- Lakes
- Stream
- Contour
- Trails
- Surfaced Areas
- Camping
- Lodging
- Visitor Services
- Housing
- Operations
- Parking
- Buildings
- Retain Building
- Remove Building
- Restoration Areas
- 100-year Floodplain
- Designated Wilderness
- Recreational Segment
- Wild Segment
- Scenic Segment

MERCED LAKE HIGH SIERRA CAMP

(1) Merced Lake Backpackers Camping Area: Retain the designated camping area. Replace flush toilets with composting toilets.

(2) Merced Lake High Sierra Camp: Retain all 22 units (60 beds) at the existing lodging facility. Replace flush toilets with composting toilet.

(3) Merced Lake East Meadow: Develop preliminary grazing capacities for the meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed to protect the meadow.

OTHER SEGMENT 1 CAMPING AREAS

- Little Yosemite Valley: Continue designated camping in this camping area. Retain infrastructure, such as composting toilets.
- Moraine Dome: Continue designated camping in this camping area.

WAWONA

(1) Wawona Campground: Retain 83 campsites, and one group site. Remove 13 sites that are located within 100 feet of the river or in culturally sensitive areas.

(2) Wawona Golf Course and Golf Shop: Retain the existing nine-hole golf course and golf shop retail and food service.

(3) Wawona Stables: Eliminate stable operation and commercial day rides. Relocate two stock-use campground sites from sensitive resource area to existing stables area.

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Detailed Description of Alternative 6 by Segment

Segment 1: Wilderness above Nevada Fall (Wild Segment)

Actions to Protect and Enhance River Values

In addition to the "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 6 would include the following actions to protect and enhance river values:

Biological Values

- Establish a preliminary grazing capacity of a maximum of 58 pack stock nights annually (depending on meadow condition) for the Merced Lake East Meadow. Exclude pack stock from seasonally inundated portions of the meadow. Meadow grazing opening dates may vary annually. Use levels may be adapted to ensure the meadow condition meets the management standard for the bare soil indicator.

Recreational Values

- Retain the existing capacity of the Merced Lake High Sierra Camp. Reduce the visual contrast of the camp when canvas tents need replacement.
- Establish a limit of 7.5 pack-strings per week (for an average of 30 strings per month) for resupply of the Merced Lake High Sierra Camp.

User Capacity, Land Use and Facilities Management

Alternative 6 would accommodate the same kinds and amounts of use that exist today in Segment 1. In addition to the "Actions Common to Alternatives 2-6", Alternative 6 would include the following actions to manage user capacity, land use and facilities:

Visitor Activities and Services

Overnight use in this segment would include visitors staying at the Merced Lake High Sierra Camp and visitors backpacking and staying overnight at either designated camping areas or dispersed areas throughout the Wilderness.

Under Alternative 6, private boating would be allowed in Segment 1. Generally, use in this segment would consist of short floats using boats that can easily be carried into this remote area. Only 10 boats per day would be allowed, and a permit would be required. The boating permits would be linked to overnight backcountry permits. See Appendix R for additional information on equipment restrictions, open stretches, and put-in and take-out locations.

Under Alternative 6, the findings of the Determination of Extent Necessary (DEN) (Appendix L) would be implemented. Following is a summary of the commercial use permitted:

- Allowance of up to two overnight commercial groups per Wilderness zone.
- No camping or travel allowed more than one-quarter mile from a maintained trail or public access road.
- No more than two commercial group day hikes per day per trail.

- All commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of three persons (including employees), only two pack animals are allowed (in addition to three riding stock).
- Additional seasonal and weekend restrictions would apply in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones as indicated in Appendix L.

Visitor Overnight Capacity

The existing Wilderness zone capacities would be retained (Table 8-44). The Little Yosemite Valley Zone would be managed to a capacity of 150 people using a zone quota or zone pass-through system. Services would be managed as follows:

- Retain the Merced Lake High Sierra Camp at its current capacity (60 people per night); convert the flush toilets at the camp to composting toilets.
- Retain designated backpacker camping areas at Little Yosemite Valley, Moraine Dome, and Merced Lake; remove the flush toilets from the Merced Lake Backpackers Camping Area and replace with composting toilets.

TABLE 8-44: WILDERNESS ZONE CAPACITIES FOR ALTERNATIVE 6

Wilderness Zones	Alt 6 Zonewide Capacity	Alt 6 Zone Capacity* Specific to the River Corridor
Little Yosemite Valley Zone	150 people	150 people
Merced Lake Zone	50 people	50 people
Washburn Lake Zone	150 people	100 people
Mount Lyell Zone	50 people	10 people
Clark Range Zone	50 people	10 people

NOTES:

* For some Wilderness zones, only a small portion of river corridor that overlaps the zone. Therefore, park planners calculated capacities that itemize the number of people in both the Wilderness zone and the river corridor portion of the zone. These calculations assume that visitors have the ability to camp out of sight and sound of other parties and that minimum impact camping is available within the segment.

Visitor Day-use Parking Capacity

Day-use access to this segment is addressed under "Actions Common to Alternatives 2-6."

Administrative Activities

- Continue current administrative activities, which consist primarily of regular ranger patrols, utility work, trail and restoration work, and research. These activities are seasonal and less frequent compared to visitor use, and do not significantly affect overall user capacity.

Segment 2: Yosemite Valley (Recreational and Scenic Segments)

Actions to Protect and Enhance River Values

In addition to "Actions Common to Alternatives 2-6" (beginning on page 8-47), Alternative 6 would include the following actions to protect and enhance river values:

Geological/Hydrological Values

- **Stoneman Bridge –** Retain Stoneman Bridge; mitigate the hydrological effects of the bridge by placing large wood on the riverbanks to address scouring, adding brush layering, and increasing channel complexity between Clark's Bridge and Sentinel Bridge (as described in Chapter 5 and Appendix E).
- **Ahwahnee and Sugar Pine Bridges –** Retain the Ahwahnee and Sugar Pine bridges; mitigate the hydrological effects of the bridges by placing large wood on the riverbanks to address scouring, adding brush layering, and increasing channel complexity between Clark's Bridge and Sentinel Bridge (as described in chapter 5 and Appendix E).
- **Sugar Pine Bridge –** Reduce the width of the cut-off channel upstream of Sugar Pine Bridge through a combination of fill, constructed log jams, and bioengineered bank stabilization.

Water Quality

- Reroute the pack stock trail (from the Concessioner Stables) to the north, adjacent to the Happy Isles Loop Road (the existing trail is removed and ecologically restored under Alternatives 2-6).

Biological Values

Alternative 6 would remove existing campsites within 100 feet of the ordinary high-water mark.

- Remove all campsites and associated infrastructure within 100 feet of the ordinary high-water mark and restore natural floodplain and riparian habitat (12 acres).
  - **Backpackers Campground**: Remove 15 sites within 100 feet of the ordinary high-water mark.
  - **North Pines Campground**: Remove 14 campsites from within 100 feet of the ordinary high-water mark; restore native riparian vegetation.
  - **Lower Pines Campground**: Remove 5 sites from within 100 feet of the ordinary high-water mark; restore native riparian vegetation.
  - **Upper Pines Campground:** Remove two campsites for archeological resource concerns.
- **Former Lower and Upper River Campgrounds** – Remove abandoned facilities within 150 feet of the ordinary high-water mark and restore 19.7 acres of natural floodplain topography and riparian/wetland habitat; re-establish overflow channels where possible. Fence and close the riparian zone at the location of the former Upper River Campground to protect the riverbank from trampling; direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach.
- **Yosemite Lodge** – Remove all existing buildings at Yosemite Lodge and restore natural floodplain conditions (replace lodging and associated facilities with a completely redesigned facility located outside the floodplain). Construct enough parking to accommodate the lodging units and restore the remaining area.
- **Former Pine and Oak Units** – Redevelop the disturbed footprint of the former Yosemite Lodge units and cabins (those that were damaged by the 1997 flood and subsequently removed). Retain one service road to the well house.
- **Yosemite Village** – Move the Yosemite Village Day-use Parking Area northward so that it is 150 feet from the ordinary high-water mark of the Merced River and outside a designated 50-foot setback from Indian Creek; remove fill material and restore the riparian habitat adjacent to the river.

- **Housekeeping Camp** – Remove lodging and other facilities at Housekeeping Camp that are within the ordinary high-water mark (remove 34 units); restore native riparian habitat (1 acre). Adjust the existing fencing along the riverbank to protect the restored riparian habitat. Direct visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off the current eastern river access point (located on a steep, eroded bank) and actively restore the riverbank with brush layering.

Alternative 6 would remove or mitigate the effects of trails and roads through meadows:

- **Bridalveil Meadow** – Reroute the 780-foot segment of the Valley Loop Trail that crosses Bridalveil Meadow so that it is adjacent to Southside Drive.
- **Slaughterhouse Meadow** – Construct boardwalks through sensitive wet meadow habitat at Slaughterhouse Meadow.
- **El Capital Meadow** – Fence the northern and southern perimeters of the meadow to discourage foot traffic into the meadow, and designate all meadow access using boardwalks and viewing platforms. Selectively remove conifers that block views of El Capitan from the roadside to discourage foot traffic into the meadow.
- **Ahwahnee Meadow** – Retain Northside Drive and bike path in current configuration; add culverts to improve hydrologic connectivity through Ahwahnee Meadow. Install a boardwalk to traverse wet areas through Ahwahnee Meadow (350 feet long).
- **Stoneman Meadow** – Retain Southside Drive through Stoneman Meadow as a necessary part of the traffic pattern under this alternative. Mitigate effects of the road through the meadow with culverts or other engineered solutions that allow passage of surface water. Remove roadside parking along Stoneman Meadow and restore the area to meadow conditions.

Cultural Values

- Rehabilitate Superintendent's House and Garage (Residence 1) in its existing location to preserve the building's historic integrity and prepare the structure to withstand periodic flooding. Follow the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995).

Recreational Values

- Allow boating of up to 150 people per day for private use and 100 boats at one time for commerical use. This reduction would promote the dispersal of recreation opportunties along the river corridor.

User Capacity, Land Use and Facilities Management

Visitor Activities and Services

Alternative 6 would enhance opportunities for visitors to connect to the river through both infrastructure improvements and the expansion of recreational opportunities. The following changes to visitor activities and services would occur, in addition to those common to Alternatives 2-6:

- Allow both private and commercial boating in Segment 2.
    - Private boating would be allowed in the river reach between Clark's Bridge and Pohono Bridge, with put-ins and take-outs below Clark's Bridge on river right, below Stoneman Bridge on river left, at Sentinel Beach, and along the roadside below Pohono Bridge. This use would be limited by permit to 150 trips per day and monitored to ensure protection of river values.

  - Commercial boating would be allowed between Stoneman Bridge and Sentinel Beach. This use would be limited to 100 boats at one time (approximately 250 trips per day).

- Improve the Cathedral, Sentinel, and Swinging bridge picnic areas.
- Provide a new picnic area (eight tables and 20 parking spaces) and designated river access for rafting in the Lower River area.
- Retain the Housekeeping Camp shower houses, restrooms, laundry, and grocery store.
- Retain Concessioner Stables in Yosemite Valley to support Merced Lake High Sierra Camp and overflow parking for campgrounds. Eliminate commercial horseback day rides originating from Yosemite Valley. Retain kennel service.
- Move the raft rentals and bicycle rentals at Curry Village to locations outside of the river corridor.
- Move the bicycle rentals at Yosemite Lodge to a location outside of the river corridor.
- Move the ice skating rink at Curry Village to a parking lot outside of the river corridor. Operate as a temporary seasonal facility.
- Retain the swimming pools at the Ahwahnee Hotel, Yosemite Lodge, and Curry Village.

Visitor Overnight Capacity: Camping

Under Alternative 6, camping would be increased to 739 sites, accommodating up to 4,626 people per night:

- **Backpackers Campground** – Retain 10 walk-in sites. Remove 15 sites within 100 feet of the ordinary high-water mark. Construct 16 new walk-in campsites west of Backpackers Campground, in less sensitive area outside the 100-year floodplain.
- **Upper and Lower River Campground** – Construct a new campground with 30 walk-in sites and 2 group sites north of the river, a minimum of 150 feet away from the ordinary high-water mark. Construct a new campground with 40 walk-in sites at Lower River, 150 feet away from the ordinary high-water mark.
- **North Pines Campground** – Retain 72 campsites. Remove 14 sites from within 100 feet of the ordinary high-water mark.
- **Upper Pines Campground** – Retain 238 campsites, removing 2 sites for archeological resource concerns. Construct a new RV campground loop with 36 RV sites. Construct a new walk-in campground with 49 individual sites and 2 group sites.
- **Lower Pines Campground** – Retain 71 campsites. Remove 5 sites from within 100 feet of the ordinary high-water mark.
- **Yosemite Lodge** – Construct a new campground with 20 RV sites near the parking area west of Yosemite Lodge.
- **Camp 4** – Retain 35 walk-in campsites and 35 parking spaces. Construct 35 additional campsites east of Camp 4; establish a new parking area (41 spaces) for the expansion within the disturbed footprint of the former service station.
- **Yellow Pine** – Four group campsites (up to 120 people) would be retained at the Yellow Pine Campground.
- **Eagle Creek** – Construct a new campground with 79 drive-in sites, including RV sites.

Visitor Overnight Capacity: Lodging

Lodging would be increased to 1,248 units accommodating 4,380 people per night. Common to Alternatives 2-6, the Ahwahnee would continue to provide 123 lodging rooms. The following additional lodging would be retained, removed, or constructed under Alternative 6:

- **Curry Village** – Retain 355 lodging units at Curry Village: 290 canvas tent cabins, 18 units at Stoneman House, and 47 hard-sided cabin-with-bath units. Remove all existing cabins and associated structures at Boys Town. Construct 98 new lodging units suitable for year-round use (25 duplex buildings, two 4-plex buildings, and five two-story 8-plex buildings, all with private baths); construct a new guest check-in building and pedestrian pathway; provide 78 new parking spaces along the existing roadway and 20 new parking spaces along the eastern edge of the Curry Orchard Parking Area, all within the existing developed footprint. Provide 430 designated overnight parking spaces at the Curry Orchard Parking Area.

Preliminary drawings for lodging improvements at Boys Town, as proposed in Alternative 6, have been completed to assess the feasibility of this project. See "Conceptual Designs for Potential Project Implementation" (at the end of the Alternative 6 discussion) for site details and design drawings.

- **Housekeeping Camp** – Retain 232 units and associated facilities. Remove 34 units (17 buildings) that are within the ordinary high-water mark. Restore approximately one acre of riparian habitat. Adjust the existing fencing along the riverbank to protect the restored riparian habitat.
- **Yosemite Lodge** – Remove all existing buildings, including four buildings in the 100-year floodplain). Replace with a new three-story lodging structures located outside of the 100-year floodplain and designed to provide a total of 440 units.

Visitor Day-use Parking Capacity and Transit

Alternative 6 would allow for an increase in peak daily visitation to Yosemite Valley. Collectively, day-use parking, regional transit, and tour bus capacities would accommodate up to 9,449 people at one time in Segment 2.

- Increase available day-use parking spaces (+61 spaces) for a total of 2,398 parking spaces in Yosemite Valley. Provide additional day-use parking in West Valley (+250 spaces) and El Portal (+200 spaces). Including the remote lots, the net gain in parking for day use in Yosemite Valley would be 511 spaces.

Visitor circulation would be improved to reduce traffic congestion and to provide a better arrival experience for visitors. Major actions would include the following:

- Redesign day-use parking at Yosemite Village to provide 850 parking spaces and a new comfort station. Construct a pedestrian underpass and two roundabouts—one at Northside Drive/Village Drive and one at Sentinel Drive/Northside Drive—to address traffic congestion and pedestrian-vehicle conflicts.
- Construct a parking lot with 300 designated day-use parking spaces and a new 3,000 square foot comfort station west of Yosemite Lodge; provide 15 bus loading/unloading spaces.
- Determine the alignment of a grade-separated pedestrian crossing near Yosemite Falls to alleviate traffic congestion at this location.

Preliminary drawings for the Yosemite Village Day-use Parking Area and the Yosemite Lodge, as proposed in Alternative 6, have been completed to assess the feasibility of these projects. See "Conceptual Designs for Potential Project Implementation" at the end of the Alternative 6 discussion for site details and design drawings.

- Construct a West Valley Parking Area to provide 250 overflow parking spaces south of Southside Drive; expand the Yosemite Valley shuttle service to this and other locations in West Valley.
- Construct a new day-use parking lot in El Portal (200 parking spaces) and provide shuttle service to the Valley from this location.

Day use in East Yosemite Valley would be managed using the El Capitan Traffic Diversion. The El Capitan crossover has been used by park staff for many years to mitigate traffic congestion during times of peak visitation. The crossover is ideally located for this purpose because roads from all park entries join Southside Drive prior to reaching this location. Therefore, all inbound vehicles must pass through this location and can be redirected to outbound traffic lanes prior to reaching East Valley. Data regarding traffic accumulations would be collected by automated traffic counters and reported in real-time to park managers. Before East Valley capacity was reached, park staff would begin re-routing traffic from Valley destinations until conditions improved. The availability of real-time data would make this approach a proactive response to a dynamic but fairly predictable event. Day users would also be able to access the Valley by parking in the new El Portal remote parking area (200 parking spaces) or the West Valley Overflow Parking Area (250 spaces) and taking a shuttle.

TABLE 8-45: TRANSIT OPTIONS – ALTERNATIVE 6

Regional Transit Options	
HIGHWAY 140 Merced/Mariposa to Yosemite Valley	12 runs per day Additional stop at the El Portal remote parking area (year round)
HIGHWAY 41 Fresno/Oakhurst to Yosemite Valley	12 runs per day Dedicated shuttle to Badger Pass as collection point for shuttle to Glacier Point
HIGHWAY 120 West Groveland/Sonora to Yosemite Valley	8 runs per day (summer only)
HIGHWAY 120 East Inyo/Mono County (Mammoth Lakes) to Yosemite Valley	2 runs per day (summer only)
Yosemite Valley Shuttle Options	
East Yosemite Valley	5 minute peak interval between buses Year-round except Visitor Center direct
Visitor Center Express Yosemite Valley Day-use Parking Area to Visitor Center	7 minute interval between buses (summer only)
El Capitan Crossover	15 minute interval between buses (summer only)
West Yosemite Valley	Expand Valley Shuttle service to Bridalveil (summer only) 30 minute interval between buses Stops at El Capitan picnic area, El Capitan Meadow, Bridalveil Fall straight, Cathedral Beach, Yellow Pine, and Four-mile/Swinging Bridge
NOTE: * All Regional Transit runs are round trip.	

Regional transit service into Yosemite Valley during the peak summer season would be expanded as follows:

- Highway 140 (Merced to Yosemite Valley): Maintain service at 12 runs per day. Add a stop at the El Portal remote parking area.
- Highway 41 between Fresno/Oakhurst and Yosemite Valley: implement new public transit service at 12 runs/day.

- Highway 120 West (Sonora/Groveland to Yosemite Valley: Increase service to 8 runs per day (summer only).
- Highway 120 East (Mammoth Lakes to Yosemite Valley): Increase service to two runs per day (summer only).

Under Alternatives 2-6, shuttle bus service would be expanded by increasing the frequency of the year-round East Valley service to five-minute intervals during peak season. The Visitor Center Express shuttle service (summer only) would be improved by increasing the frequency to seven-minute intervals between buses. Shuttle service would be expanded as follows:

- Expand Valley Shuttle service to Bridalveil (summer only), with 30-minute intervals between buses and stops at West Valley Parking, El Capitan picnic area, El Capitan Meadow, Bridalveil Fall straight, Cathedral Beach, Yellow Pine, and Four-mile/Swinging Bridge.
- Add shuttle service between the El Portal remote parking area and Yosemite Valley.

Administrative Activities

Some administrative activities would be relocated:

- Relocate the Yosemite Lodge housekeeping and maintenance facilities to a location behind the food service building at Yosemite Lodge.

Employee Housing and Employee Parking

Compared to existing conditions, 179 fewer concessioner employees would be housed in Yosemite Valley. The remaining housing for 972 concessioner employees would be provided as follows:

- Retain housing for 42 employees in the dormitory at the Ahwahnee Hotel.
- Provide housing for 436 employees at Curry Village:
  - Retain permanent housing in the Curry Village residential area (223 employees).
  - Retain employee housing at Concessioner Stables in Yosemite Valley (49 employees).
  - Construct 16 dormitory buildings housing 164 employees.
- Provide housing for 390 employees at Yosemite Village:
  - Retain permanent housing at Indian Creek and Upper Tecoya (28 employees).
  - Retain Ahwahnee Row, Y Apartments, garage housing, and Hospital Row (43 employees).
  - Retain Tecoya Dorms (232 employees).
  - Construct new dormitory housing in the Lost Arrow parking lot (50 employees).
- Provide housing for 104 employees at Yosemite Lodge:
  - Construct new housing for 104 employees at Yosemite Lodge (two structures with 26 double-occupancy units each).

In this alternative, 946 parking spaces would be allocated for administrative uses (including parking spaces near residential areas).

An additional 314 Valley employees would be housed in El Portal.

Segment 3: Merced Gorge (Scenic Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 3 under Alternative 6 are included in "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

This alternative would provide for the same kinds and amounts of use that exist today. The majority of actions in Segment 3 under Alternative 6 are discussed in "Actions Common to Alternatives 2-6". Alternative actions that are not included in that section are listed below.

Visitor Activities and Services

Under Alternative 6, only private boating would be allowed in Segment 3. It is expected that the water craft used in this segment would be kayaks. Boaters would be allowed on the river below Pohono Bridge (in Segment 2) through El Portal (Segment 4). Boaters would be allowed to put in and take out at any of the roadside pull-outs. This use would be restricted to 10 people per day. See Appendix R for additional information on equipment restrictions, open stretches, and put-in and take-out locations.

Transit Options

Public transit options along this segment would be expanded as described in the Yosemite Valley segment (see Segment 2 above). This river segment is considered a "pass through" segment and therefore does not contain any stops for transit passengers to enter or depart.

Segment 4: El Portal (Recreational Segment)

Actions to Protect and Enhance River Values

All actions to protect and enhance river values in Segment 4 under this alternative are addressed in "Actions Common to Alternatives 2-6" (see page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 6 would introduce additional visitor use to this segment in addition to expanding employee housing capacity.

Visitor Activities and Services

Most visitor activities and services in Segment 4 are considered in "Actions Common to Alternatives 2-6". Additional actions would include:

- Allow unrestricted private boater use in Segment 4. Expected use would be mostly rafts and kayaks. Boaters would be allowed to paddle the stretch of river from below Yosemite View Lodge to beyond the Foresta Bridge, at which point boaters would exit the segment. Boaters would be able to use put-ins and take-outs west of the hotel, at the store/gas station and at the Red Bud launch site.

Visitor Overnight Use

No visitor overnight accommodations on NPS lands are proposed in Alternative 6.

Visitor Day-use Capacity

Visitor day-use parking would be expanded in El Portal under Alternative 6. A new remote visitor day-use parking area (200 spaces) would be provided at the Abbieville site in El Portal. This parking area would provide day-use access to Yosemite Valley, with a dedicated shuttle service to and from that location. The use associated with this parking area is accounted for in the Valley daily visitation levels reported above.

The total inventory of day-use parking in this segment would be 414 spaces, including 214 spaces for visitors to El Portal and 200 remote parking spaces for visitors to Yosemite Valley.

Administrative Activities

Administrative activities in Segment 4 are considered in "Actions Common to Alternatives 2-6" (page 8-47).

Employee Housing Capacity

Under Alternative 6, employee housing would be increased in El Portal. Dormitories would be added to Abbieville (258 beds in total). New duplex or triplex units (8 beds) and new dormitories (36 beds) would be constructed at Rancheria Flat. A dormitory or co-housing unit would be constructed at the El Portal Village Center to provide 12 beds. All new buildings would be constructed outside of the 100-year floodplain. These units would be added to replace temporary or substandard housing units that would be removed from Yosemite Valley.

Employee and Administrative Parking Capacity

Most employee and administrative parking actions are discussed in "Actions Common to Alternatives 2-6" (page 8-47). Additionally, under Alternative 6, 44 parking spaces would be added with the Rancheria Flat housing expansion, 12 parking spaces would be added with the El Portal housing expansion, and 258 parking spaces would be added for residents of the new Abbieville site.

Transit Options

Under Alternative 6, public transit options would be expanded on the travel corridor passing through this segment. Along with shuttle service, the new day-use parking lot at Abbieville would be linked into the transit schedule. Bus service would be provided on a 30-minute interval during peak use season and would run directly to Yosemite Valley. For a complete summary of the transit options along this corridor see the Segment 2 summary above.

Segment 5: South Fork Merced above Wawona (Wild Segment)

Actions to Protect and Enhance River Values

There are no actions in Segment 5 beyond what is proposed under "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 6 would provide for the same kinds and amounts of use that exist today in Segment 5. The majority of actions in Segment 5 under Alternative 6 are discussed in "Actions Common to Alternatives 2-6". Additional actions included in this alternative are described below.

Visitor Activities and Services

Private boating would be allowed in this segment. Generally, use in Segment 5 would consist of short floats using inflatable raft or other paddle craft that can be carried into this remote area. A maximum of 10 boats per day would be allowed and boating permits could be obtained in conjunction with the required Wilderness permit.

Visitor Day-use Capacity

Day-use parking for the trailheads that lead to this segment is included in the Wawona area (see Segment 7, below). Other users may gain access to this segment from trailheads that originate in the Sierra National Forest south of this segment, but use is typically minimal.

Transit Options

Transportation options for reaching the trailheads that access Segment 5 are discussed under Segment 7.

Segments 6 and 7: Wawona Impoundment and Wawona (Recreational Segments)

Actions to Protect and Enhance River Values

All actions for Segment 6 are included in "Actions Common to Alternatives 2-6" (see page 8-47); this segment will not be discussed further. For Segment 7, the following additional actions have been included in Alternative 6 to enhance cultural values and water quality:

Cultural Values/Water Quality

- **Stock Campground** – Relocate stock campground (two sites) from a culturally sensitive area to the Wawona stables area.
- **Wawona Campground** – Remove 13 sites that are located either within 100 feet of the river or in sensitive resource areas.

User Capacity, Land Use and Facilities Management

Overall, this alternative would provide for the same kinds and amounts of use that exist today in the Wawona area. The majority of actions to be taken in Segment 7 are discussed in "Actions Common to Alternatives 2-6". Additional actions included in Alternative 6 are described below.

Visitor Activities and Services

- **Boating** – Boating would be limited to private use by permit, with a maximum of 10 boats per day. The allowable reach of the river would be from below the Swinging Bridge area to the Wawona Campground, excluding the Wawona impoundment.
- **Golfing** – Retain the Wawona Golf Course.

- **Tennis** – Retain the Wawona Hotel Tennis Court.
- **Wawona Commercial Stables** – Discontinue commercial horseback day rides and remove the Wawona stables; repurpose the stables area as a stock use campground.

Visitor Overnight Capacity

- Under Alternative 6, the total overnight capacity for Segment 7 would be 190 units, accommodating up to 787 people per night.
- The Wawona Campground capacity would be reduced slightly to 84 sites (including one group site), accommodating 528 people per night.

Transit Options

Under Alternative 6, transit options would be expanded. Regional bus service, similar to that provided on the Highway 140 corridor, would be introduced on Highway 41. A maximum of 12 runs per day would be made between Fresno/Oakhurst and Yosemite Valley. Additionally, the Wawona area shuttle would continue, serving key destinations within this segment and the Mariposa Grove of Giant Sequoias. Finally, up to two concession-operated runs per day would be made between Wawona and Yosemite Valley.

Segment 8: South Fork Merced below Wawona (Wild Segment)

Actions to Protect and Enhance River Values

No actions are proposed in Segment 8 beyond those described by "Actions Common to Alternatives 2-6" (page 8-47).

User Capacity, Land Use and Facilities Management

Alternative 6 would provide for the same kinds and amounts of use that exist today in Segment 8. The majority of actions for Segment 8 under Alternative 6 are discussed in "Actions Common to Alternatives 2-6". Additional actions included in Alternative 6 are described below.

Visitor Activities and Services

Private boating would be allowed in this segment. Such use would generally consist of short floats using inflatable raft or other paddle craft (that can be carried out of this remote area), or pass-through trips by experienced kayakers. A maximum number of 10 boats per day would be permitted. The boating permits would be linked to overnight backcountry permits.

Transit Options

Transit services for access to this segment are described above under Segment 7.

Conceptual Site Drawings

Boys Town

In Alternative 6, the existing Boys Town cabins and facilities would be removed and replaced with 98 new lodging units suitable for year-round accommodations. This would consist of 25 duplex buildings, two 4-plex buildings, and five 2-story 8-plex buildings. 78 overnight guest parking spaces would be constructed along a new roadway that would connect the Curry Village parking area with East Valley campgrounds. The Campground Reservation Center would be relocated to a more accessible location, closer to East Valley campgrounds. A new 2,840-foot pedestrian pathway and 20 new parking spaces (along the eastern edge of the Curry Orchard Parking Area) would be constructed within the existing developed footprint. The Curry Orchard Parking Area would be improved for permanent use using best management practices (with a total of 430 parking spaces). The project area would encompass 8.4 acres and would include: approximately 33,000 square feet for new buildings; 56,800 square feet of utility trenching; 14,200 square feet for pedestrian pathways; and 29,400 square feet of new parking, for a total of three acres. Temporary construction staging would require approximately 1.4 acres and would likely take place within the existing Curry Orchard Parking Area.

Yosemite Village Day-use Parking Area

In Alternative 6, the 12-acre Yosemite Village (Camp 6) day-use parking area would be moved 150 feet north from the high-water mark of the river to facilitate riparian restoration goals and prevent riparian resource damage. Restoration actions would remove non-native fill material, re-contour the topography, and plant native vegetation. The redesigned parking area would be formalized to provide a total of 850 parking spaces and a new comfort station. A pedestrian underpass and two roundabouts (one at the Village Drive/Northside Drive intersection and one at the Sentinel Drive/Northside Drive intersection) would be constructed in conjunction with improved pedestrian pathways and would address overall circulation at the site. The Concessioner General Office, Valley Garage, and Art Activity Center (former bank building) would be removed and the Village Sport Shop would be repurposed as a visitor contact station.

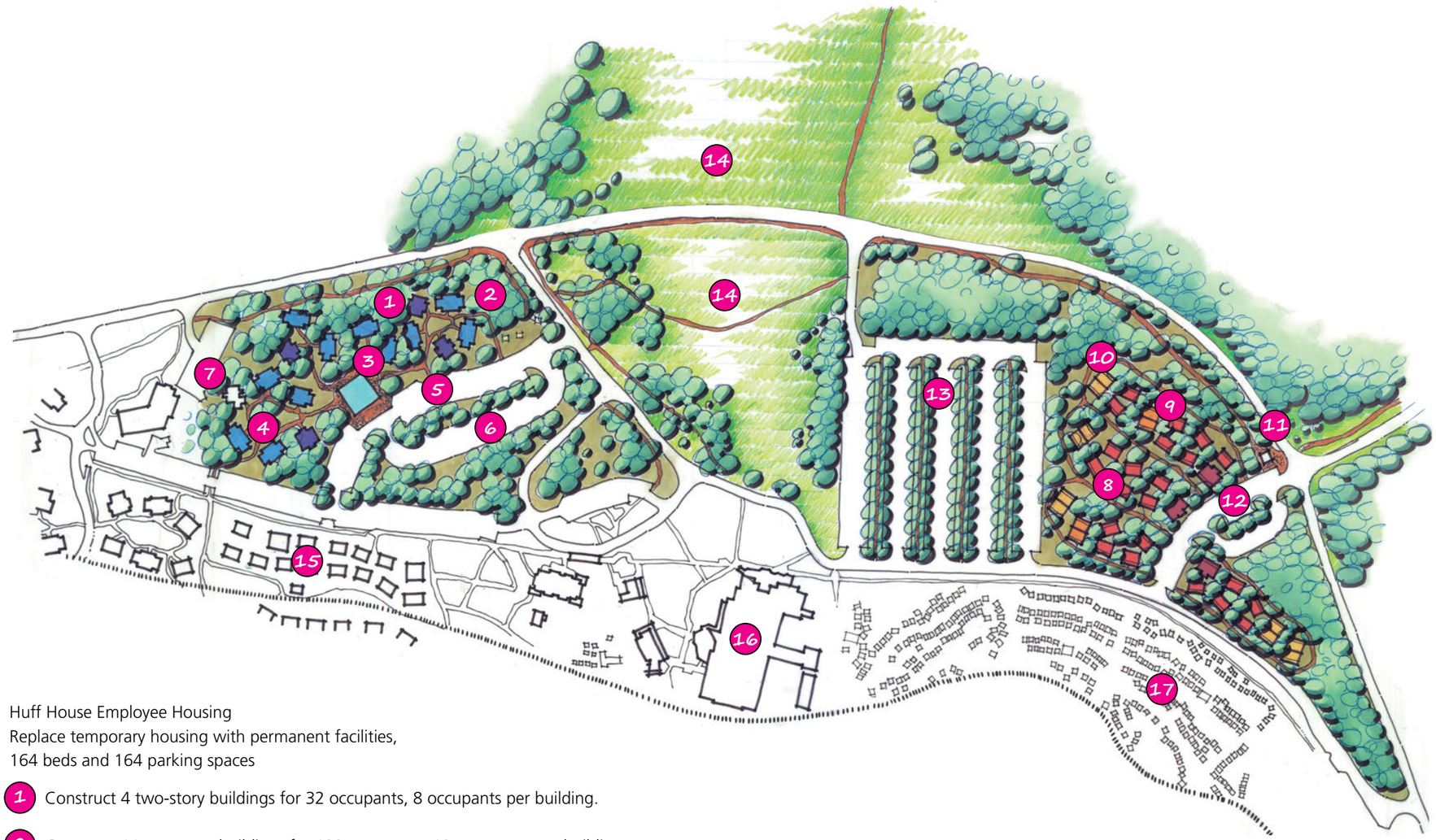
The project area for improvements at the Yosemite Village Day-Use Parking Area in Alternative 6 would cover approximately 27.5 acres, most of which is currently developed, and would include: 1.2 acres for existing building removal; 4,000 square feet for the new comfort station; 5.4 acres of pavement removal; 2.6 acres of new roadway; 8.3 acres for new parking; 15,220 square feet of utility service trenching; 43,350 square feet for new pedestrian pathways; and 55,000 square feet for the pedestrian underpass. Temporary construction staging would cover an area of approximately 2 acres.

Yosemite Lodge

In Alternative 6, the former annex area west of Yosemite Lodge would be redeveloped to provide 300 day-use parking spaces, campsites for 20 RVs, parking for 15 buses, a new 3,000 square foot comfort station, and a relocated shuttle stop. The short-term bus drop-off area would be relocated to the Highland Court area. The abandoned concessioner wellness center and linen storage and laundry buildings would be removed. The linen storage and laundry buildings would be replaced as an addition to the food service building. The project area for improvements at Yosemite Lodge in Alternative 6 would cover approximately 13.5 acres,

most of which is currently developed, and would include: 55,850 square feet of existing building and pavement removal; 3,000 square feet for the new comfort station and shuttle stop; 17,300 square feet of utility service trenching; 3.6 acres for parking; and 5,000 square feet for pedestrian pathways. Temporary construction staging would take place over a 2-acre area within the existing footprint. Existing vegetation would be retained to separate and screen parking bays; bioswales would serve to filter and treat storm water runoff.

Also in Alternative 6, the temporary modular housing at Highland Court and the Thousands Cabins would be removed and replaced with two new buildings housing 104 concessioner employees. In addition, a new parking area would provide 78 employee parking spaces, parking for 3 shuttle buses, and 53 day-use parking spaces for the public. The two housing sites would cover a total of 7.4 acres, most of which is currently developed, and would include: 45,500 square feet of preparation for the new buildings; 5,500 square feet of utility service trenching; and 1.8 acres for parking.



Huff House Employee Housing
Replace temporary housing with permanent facilities,
164 beds and 164 parking spaces

1. Construct 4 two-story buildings for 32 occupants, 8 occupants per building.
2. Construct 11 two-story buildings for 132 occupants, 12 occupants per building.
3. Provide common recreational area, approximately 3,600 square feet.
4. Build plaza areas and walkways with site furnishings, accent paving, and enhanced landscaping.
5. Construct a shuttle bus stop.
6. Remove ice rink and bicycle rentals. Construct an employee parking facility with 164 spaces.
7. Retain historic residence for housing purposes.

Boys Town Guest Lodging
Replace tent cabins with 98 permanent guest cabins and 78 parking spaces

8. Construct 25 duplex buildings replicating historic cabins, or 50 units subtotal.
9. Construct 2 four-plex buildings, or 8 units subtotal
10. Construct 5 eight-plex buildings, or 40 units subtotal
11. Relocate Campground Reservation Center, provide 8 parking spaces.
12. Construct a roadway connecting Curry Village and East Valley Campgrounds with 78 parking spaces guests and 8 short-term parking spaces for Campground Reservation Center. 20 parking spaces will be reserved for guest use in Curry Orchard Parking Area.

Curry Orchard Parking Area

13. Improve parking area with 430 spaces and landscape buffers with trees and bioswales that will treat storm water run-off.

Meadow Restoration Area

14. Improve hydrology, remove invasive species, promote weed control and plant native species.

Existing Curry Village Visitor Services

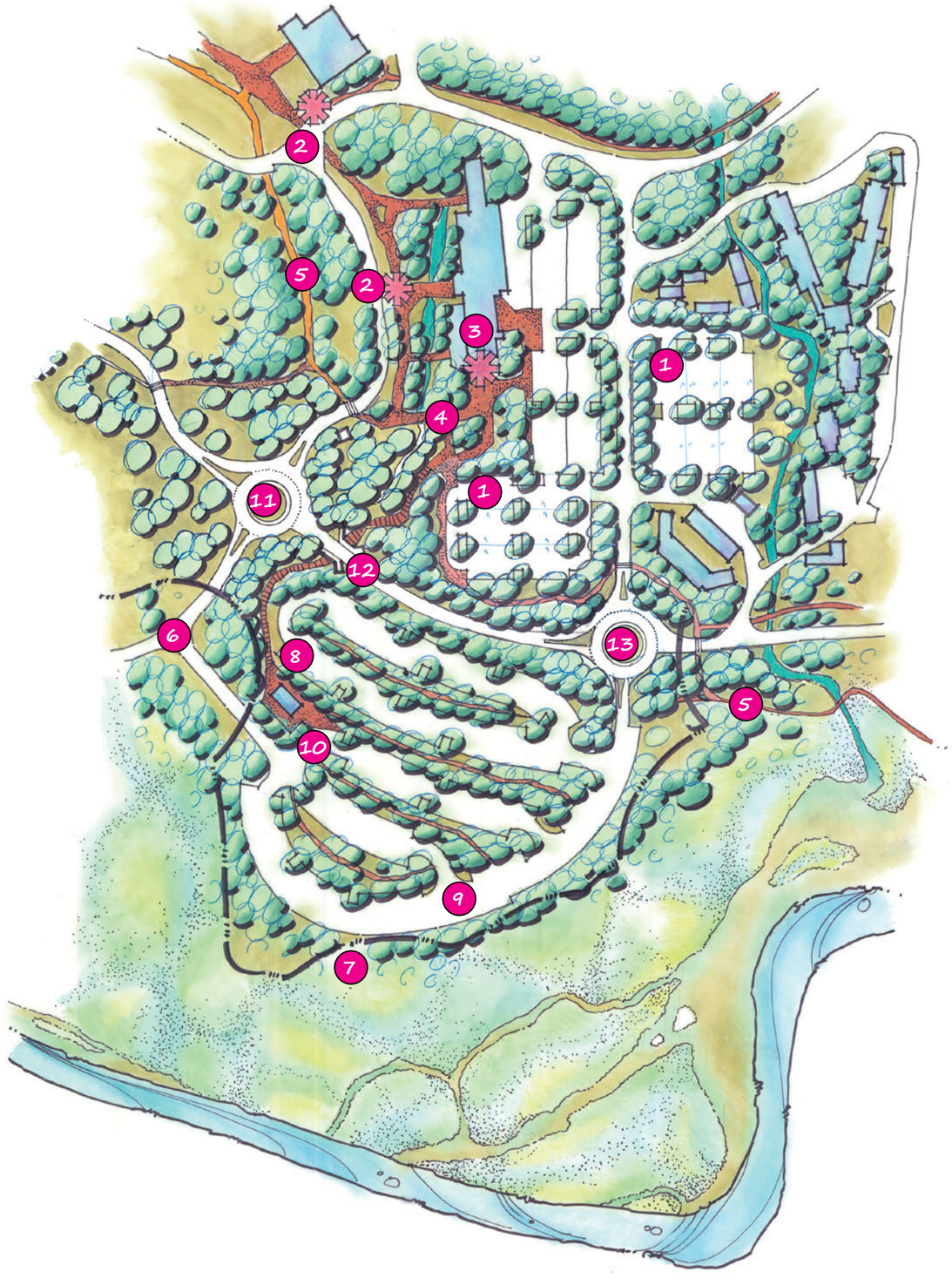
15. Retain existing historic cabins and Stoneman Cottage (65 lodging units).
16. Retain existing Curry Pavilion.
17. Retain 290 tents.

NORTH

Alternative 6
Conceptual Site Drawing for Curry Village
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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1. Eliminate Concession General Office and Garage located between the Village Store and Ahwahnee Meadow, providing more space for visitor parking.

2. Retain shuttle stops on Visitor Center Loop Drive.

3. Replace Village Sport Shop with visitor contact station.

4. Eliminate existing art activity center and improve pedestrian access.

5. Improve pedestrian connections and bike paths east and west of the day-use parking area.

6. Provide a two-way access driveway from Sentinel Drive as the primary entrance to the day-use parking area.

7. Redesign the day-use parking area to provide a 150-foot buffer from the river. Restore wetlands and meadow.

8. Create pedestrian pathways to lead visitors to the Yosemite Village mall. Construct a comfort station in a central location, connected to pedestrian walkways.

9. Provide 850 day-use parking spaces. Provide landscaped areas to retain large numbers of trees and screen parking bays and bioswales that will treat storm water run-off. Provide pedestrian pathways.

10. Relocate shuttle bus pick-up and drop-off area.

11. Construct a roundabout to alleviate traffic congestion at the intersection of Northside Drive and Sentinel Drive.

12. Construct a pedestrian underpass to eliminate conflict between automobiles and pedestrians on Northside Drive.

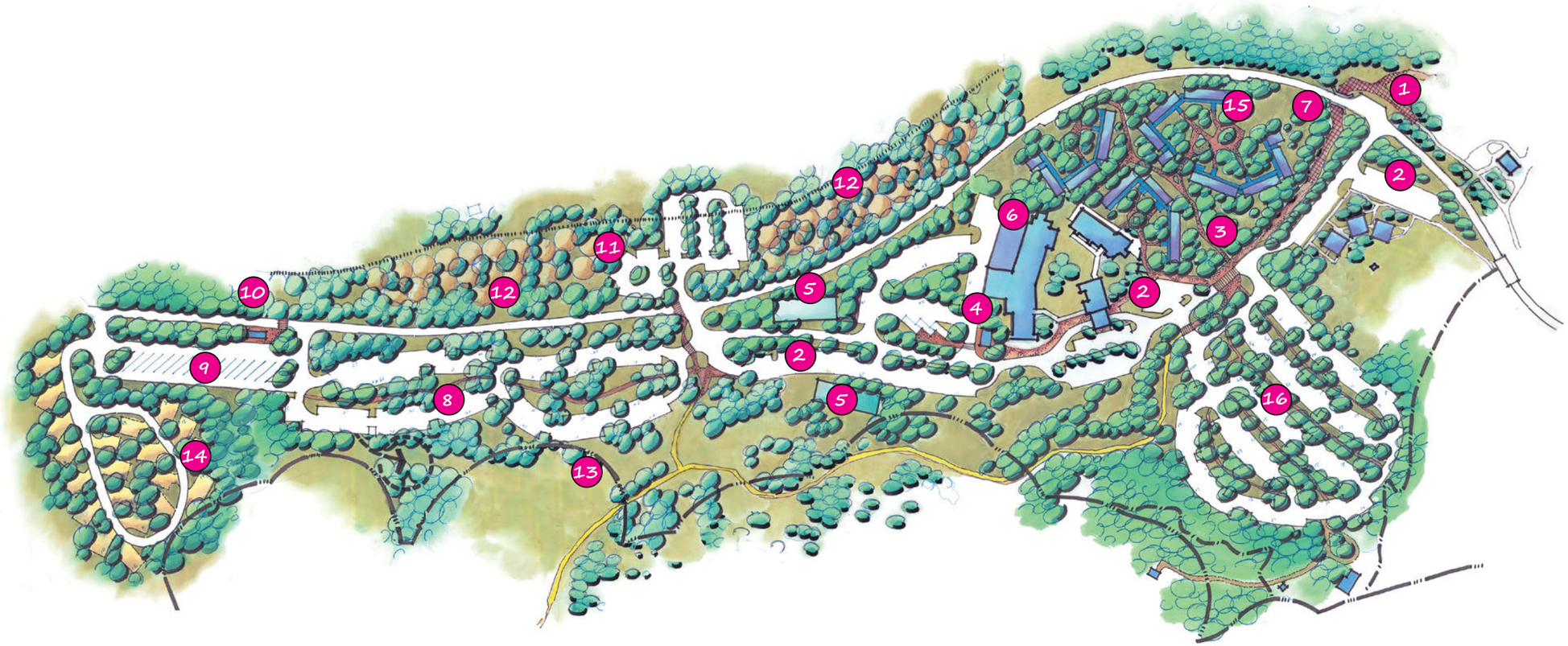
13. Construct a roundabout at the day-use parking area intersection with Village Drive and Northside Drive.

NORTH

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

Alternative 6
Conceptual Site Drawing for Yosemite Village Day-use Parking Area
Yosemite National Park
United States Department of the Interior • National Park Service

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1. Re-align Yosemite Lodge intersection within the limits of existing developed areas.

2. Maintain parking for overnight guests.

3. Enhance pedestrian circulation system.

4. Construct tour bus loading and unloading area, with shelter.

5. Construct employee housing in 2 two-story buildings with 52 occupants per building and 39 employee parking spaces per building.

6. Relocate linen storage and laundry buildings from the 100-year floodplain to an addition to the food service building. Reconfigure truck loading and unloading area. Demolish and remove existing NPS volunteer office.

7. Reconstruct a section of the Yosemite Lodge entrance road as a pedestrian and bicycle promenade with a 5% slope to an underpass. Install accent paving, landscaping, wayfinding and site furnishings, and low-voltage site lighting consistent with design vocabulary for the Yosemite Falls trail.

8. Construct 300 visitor parking spaces at Yosemite Lodge Day-use Parking Area. Maintain existing vegetation as buffers to separate and screen parking bays and bioswales that will treat storm water run-off. Provide pedestrian pathways.

9. Construct 15 tour bus parking spaces.

10. Construct a shuttle bus stop with shelter and comfort station.

11. Construct 41 additional parking spaces at Camp 4.

12. Retain 35 existing walk-in campsites at Camp 4. Construct 35 additional walk-in sites opposite existing parking facility. Occupancy is limited to 6 campers per site. Standard walk-in campsite is 3,850 square feet (70-foot diameter), including 1,200 square feet of clearance with a 15-foot perimeter buffer.

13. Protect and enhance a 150-foot riparian buffer.

14. Construct an RV loop with 20 campsites.

15. Remove guest lodging buildings and construct a three-story lodging complex with a total number of 440 lodging units and an equivalent number of guest parking spaces. Organize high-density development area to maintain existing vegetation where possible with courtyards and outdoor gathering areas for each building. Provide in-fill landscaping as required to maintain a forested environment and a visual buffer.

16. Construct parking area for 395 cars to augment existing parking areas and satisfy added lodging requirement. Maintain existing vegetation as buffers to separate and screen parking bays, and bioswales that will treat storm water run-off. Provide pedestrian pathways.

NORTH

Alternative 6
Conceptual Site Drawing for Yosemite Lodge and Camp 4
Yosemite National Park
United States Department of the Interior • National Park Service

*These drawings are provided to demonstrate where facilities would be removed, relocated, or constructed according to actions more fully described by project alternatives. The drawings do not represent a final proposal. More detailed design and construction documents would be developed consistent with the general concepts presented here.

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THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Legal Mandates

The Council on Environmental Quality (CEQ) regulations implementing NEPA (Code of Federal Regulations 40:1505.2) and the NPS NEPA guidelines require that "the alternative or alternatives which were considered to be environmentally preferable" be identified. Environmentally preferable is defined as "the alternative that would promote the national environmental policy as expressed in NEPA section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ 1981).

Section 101 of NEPA states that:

> It is the continuing responsibility of the Federal Government to . . .
>
> 1) *fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;*
> 2) *assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;*
> 3) *attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;*
> 4) *preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;*
> 5) *achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and*
> 6) *enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*

Conformance

Alternative 5 (Preferred) has been determined to be the alternative that has the greatest benefits to the biological and physical environment, while protecting, preserving, and enhancing historic, cultural, and natural resources. Alternative 5 (Preferred) would achieve a balance between user capacity and resource use by maintaining current peak visitation levels without having to implement a day-use permit system. Additionally, Alternative 5 (Preferred) would restore essential riverbank areas within 100 feet of the river, adjacent to Yosemite Valley campgrounds (including some of Upper and Lower River Campgrounds), and around Housekeeping Camp. Alternative 5 (Preferred) would be more protective of historic and cultural resources than Alternatives 2, 3, and 4 because Stoneman Bridge and Ahwahnee Bridge would be retained, and Sugar Pine Bridge would be retained, pending ongoing monitoring and further study. This alternative would attain the widest range of beneficial uses of the environment by providing a diversity of recreational opportunities, including boating access to all segments.

The No Action Alternative (Alternative 1) would provide for diversity and variety of individual choice; however, it would not best fulfill any of the other requirements. This would be particularly true in Yosemite Valley, where increasing amounts of visitor use and foot traffic would continue to affect ecologically sensitive

meadow and riparian areas, archeological resources, scenic values, visitor experience, visitor safety, and park operations.

All of the action alternatives (Alternatives 2-6) would fulfill NEPA requirements through: continuation of existing Wilderness and resource management policies; ecological restoration of fragile meadow and riparian areas; protection of water quality and archeological and historical resources; and conformance with existing requirements under Executive Order 13514 to improve the sustainability of NPS operations and facilities. The alternatives vary primarily in the extent of riparian restoration in Yosemite Valley proposed, the user capacities established, the diversity of recreational opportunities affected, and the kind and amount of overnight accommodations, parking facilities, and boating opportunities proposed.

Alternative 2 would have the most benefit to the biological and physical environment of the river, due to the removal of three bridges and 6,664 linear feet of riprap. This alternative would ecologically restore the greatest number of acres through removal of roads, lodging and parking facilities, and infrastructure from meadows and other sensitive areas. Alternative 2 would also include extensive restoration of the 100-year floodplain adjacent to Valley campgrounds, including Upper and Lower River. It would include the removal of North Pines campground, Housekeeping Camp, Yosemite Lodge, and Tecoya housing. However, this alternative is the least protective of historic and cultural resources because of the removal of three historic bridges, the Wawona golf course, and historic lodging at the Merced Lake High Sierra Camp, Housekeeping Camp, Curry Village, and Yosemite Lodge. This alternative would limit visitor choice by reducing the inventory and mixture of overnight accommodations, implementing a permit system for day-use parking, and restricting boating.

Alternative 3 would have significant benefits to the biological and physical environment, due to removal of three bridges and 6,135 linear feet of riprap. This alternative would include extensive restoration within 150 feet of the river. It also calls for the removal of Yosemite Lodge units in the 100-year floodplain, removal of roads through meadows, and major restoration of the Curry Orchard Parking Area. Similar to Alternative 2, this alternative would remove three historic bridges and the Wawona golf course. It would also reduce historic lodging at Merced Lake High Sierra Camp, Housekeeping Camp, Curry Village, and Yosemite Lodge, though not to the extent proposed in Alternative 2. Alternative 3 would make reductions to overnight accommodations, implement a day-use permit system, and place minor restrictions on boating.

Alternative 4 would have moderate benefits to the biological and physical environment, due to the removal of two bridges and 6,135 linear feet of riprap. This alternative would restore fewer acres than Alternatives 2 and 3, include partial restoration of Yosemite Valley meadows, and conduct ecological restoration within 150 feet of the river. Alternative 4 would be slightly more protective of historic and cultural resources than Alternatives 2 and 3 because Stoneman Bridge would be retained. Alternative 4 would attain a wider range of visitor opportunities through the replacement of the Merced Lake High Sierra Camp with a temporary pack camp, a significant increase in camping opportunities, and fewer agency restrictions regarding boating.

Alternative 6 would provide outstanding, diverse recreational opportunities in the river corridor and would retain significant historic resources in all river segments. However, it would have the least benefit to the biological and physical environment due to having the fewest number of acres restored and the fewest linear feet of riprap removed.

In comparison, Alternative 5 (Preferred) strikes a balance between maintaining the historic setting of the river corridor, maintaining a diversity of recreational opportunities, and allowing for restoration of natural ecosystem function to the extent possible.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

Federal agencies are required to rigorously explore and objectively evaluate a reasonable range of alternatives and briefly discuss the reasons for eliminating any alternative that is dismissed from further analysis (40 CFR 1502.14). As described in "Purpose and Need for the Final Merced River Plan/EIS" (Chapter 2), the scoping process for the plan sought to understand and consider input from the public, NPS staff, subject-matter experts, traditionally associated American Indian tribes and groups, and other federal, state, and local agencies as part of an extensive planning process for the *Final Merced River Plan/EIS*.

Chapter 2 summarizes the types of comments received during the scoping process that were considered but dismissed. These included both individual actions and major themes for an alternative that were:

- Outside the scope of the plan.
- Already decided by law, regulation, or other higher-level decision.
- Not relevant to the decision to be made.
- Missing a valid cause and effect relationship.
- Associated with small effects relative to the decision to be made.
- Conjectural and not supported by scientific or factual evidence.
- Unreasonable or infeasible because they would be cost prohibitive, violate law or policy, or contribute to other resource concerns or hazards.
- Inconsistent with the facilities and services analysis criteria (see Chapter 7).

The following major themes for an alternative were considered but dismissed from further analysis, and therefore not considered in the range of alternatives in the *Final Merced River Plan/EIS*:

The NPS should include an alternative that removes nearly all visitor services and facilities, employee housing, and administrative functions and conducts extensive restoration projects.

Rationale for Dismissal: This concept for an alternative is inconsistent with both the National Park Service Organic Act and *Management Policies 2006*. Yosemite National Park receives over 4 million visitors annually, and designation of the Merced River as Wild and Scenic was intended to ensure access and enjoyment of the river resource for current and future generations.

The National Park Service Organic Act, which begins with the overarching mandate to preserve park resources in an unimpaired condition, also includes a mandate to provide for the enjoyment of park resources by this and future generations.[1] Visitor enjoyment of park resources, in part, is related to the types of activities and supporting facilities that are made available to park visitors. The range of activities that are appropriate in parks is broad and often includes common recreational activities such as boating, camping, biking, fishing, hiking, horseback riding, cross-country skiing, and rock climbing.[2] The *Management Policies 2006* for the National Park Service recognizes that many facilities, including overnight visitor use facilities and food services, may need to be provided inside parks when travel distances to similar facilities outside the park are too great to permit reasonable use, or when having to leave the park would substantially detract from the quality of the visitor experience.[3] Visitor support and administrative facilities that are located inside

[1] *Management Policies Section 1.4.3.*
[2] *Management Policies Section 8.2.2.*
[3] *Management Policies Section 9.3.2.*

park boundaries should be sited and designed to minimize impacts on resources, avoid natural hazards, and be accessible to persons with disabilities.

The NPS should include an alternative that fully implements all the actions called for in the 1980 Yosemite General Management Plan, including the level of proposed camping and the elimination of private vehicles and tour buses.

Rationale for Dismissal: General Management Plans serve as foundation-level planning documents for national park units. They provide guidance on the necessary conditions for visitors to understand, enjoy, and appreciate a park's significant resources, and they identify the kinds of visitor uses and development that are appropriate to maintaining a park's desired resource conditions.[4] The *1980 Yosemite National Park General Management Plan* (1980 GMP) was intended to resolve such questions and serves as the basic foundation for decision-making within the park. It announced five broad goals for the park: reclaim priceless beauty, allow natural process to prevail, promote visitor understanding and enjoyment, markedly reduce traffic congestion, and reduce crowding. To effectuate these goals, the 1980 GMP specified a number of actions to reduce crowding and protect natural beauty and resources. Visitor facilities and commercial services that had become "intrusive" were to be reduced or relocated.

The Wild and Scenic Rivers Act (WSRA) directs river-managing agencies to prepare comprehensive management plans for each Wild and Scenic River. Because the Merced River is administered by the National Park Service, WSRA allows for the fulfillment of this requirement through "appropriate revisions" to the park's General Management Plan. Such revisions "shall assure that no development or use of park lands shall be undertaken that is inconsistent with the designation of such river segments" under WSRA.

The 1980 GMP predates the 1987 designation of the Merced River as Wild and Scenic. The NPS has revisited these proposed actions as part of the Merced River planning process to confirm whether specific decisions remained valid given the designation of the river corridor. Additionally, since 1980, new information regarding resource conditions and safety hazards has been learned; this was factored into the range of alternatives for the *Final Merced River Plan/EIS*. For example, the 1997 flood required a reconsideration of existing development within the floodplain, and rock fall events in 2008 forced the closure of developed areas that the 1980 GMP allowed to remain, such as overnight lodging and employee housing at Camp Curry.

The 1980 GMP proposed camping in locations, such as at Upper and Lower River Campgrounds, that are ecologically sensitive and now understood to be part of the biological river value in Yosemite Valley. The range of alternatives evaluates the maximum number of campsites that would still provide for the protection of river values. The NPS has determined that protection of biological river values requires the removal of existing campsites within 100 feet of the ordinary high-water mark. In addition, due to the geological/hydrological processes river value, new or redeveloped camping areas must be sited 150 feet from the ordinary high-water mark.

While the 1980 GMP stated that the NPS intended to curtail the use of private vehicles in the Valley, the immediate plan was to greatly reduce traffic by restricting automobile use to established capacities and encouraging visitors to leave their automobiles at remote parking areas with bus service to Yosemite Valley. Visitors would be able to drive their automobiles to overnight accommodations or one of the 1,271 parking spaces in day-use parking areas in Yosemite Valley, but once reaching their destination would use the shuttle system to access other parts of Yosemite Valley. Employees would be encouraged to carpool or use transit.

The transportation network required to support substantial reductions to automobile traffic from Yosemite Valley is infeasible, primarily due to cost, but also because of the impacts to visitors'

[4] *Management Policies Section 2.2.*

experience and ability to access the park. Additional visitor use studies since the time of the 1980 GMP indicate that a high percentage of travelers to Yosemite National Park are on a longer trip within the Yosemite Region and often enter and exit the park through different entrance stations. Remote parking areas would be highly inconvenient for these types of day users. Ensuring access to Yosemite Valley and other parts of the park by way of private vehicle provides for a diversity of visitor experiences that are integral to developing direct connections with the river.

The NPS should provide a visitation level higher than what Alternative 6 offers.

Rationale for Dismissal: During the early stages of the planning process, very high use scenarios were examined, some projected to result in over 25,000 visitors per day to Yosemite Valley (Segments 2A and 2B). These scenarios produced unacceptable visitor densities at iconic attraction sites such as Yosemite Falls and Bridalveil Fall. Moreover, transportation modeling for Yosemite Valley showed that higher use scenarios could only be accommodated by widening (or adding) roads, which would adversely impact the Biological ORV. This exercise determined the "ultimate" capacity for Yosemite Valley and helped to define the range of reasonable alternatives developed for the *Final Merced River Plan/EIS*.

COST COMPARISONS FOR THE MERCED WILD AND SCENIC RIVER COMPREHENSIVE MANAGEMENT PLAN

The costs of implementing the MRP are defined by the management actions that are included within each alternative. Table 8-46 summarizes costs that do not vary across the action alternatives and thus are considered common to all.

TABLE 8-47 summarizes those costs that vary by alternative. These costs include natural resource protection and site improvements that would occur within the river corridor. Total project costs are summarized in Table 8-48.

TABLE 8-46: PROJECT COSTS COMMON TO ALTERNATIVES 2-6

Project Component	Common to All
Yosemite Valley	
Yosemite Valley Maintenance Area	$9,833,708
Bridalveil Fall	$755,152
El Portal	
El Portal Village infill housing	$5,973,381
Wawona	
Swinging Bridge Picnic Area	$668,359
Wawona Maintenance Area	$8,665,371
Wawona Town Center	$1,811,354
Miscellaneous Site-Specific Actions*	
Other Costs Common to Alternatives 2-6	$6,606,193

TABLE 8-47: ALTERNATIVE PROJECT COSTS

Project Component	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Yosemite Valley						
Upper Pines Campground	$0	$590,359	$3,555,559	$7,529,202	$7,529,202	$7,529,202
Concessioner Stables	$0	$292,916	$87,875	$3,837,283	$0	$0
North Pines Campground	$0	$1,137,238	$470,402	$470,402	$204,555	$204,555
Lower Pines Campground	$0	$306,329	$363,372	$363,372	$480,466	$480,466
Curry Village Lodging and Employee Housing	$0	$45,005,402	$30,520,312	$32,526,590	$14,711,142	$48,327,763
Bridge Removals	$0	$3,950,898	$3,950,898	$2,637,067	$0	$0
Housekeeping Camp	$0	$1,767,149	$1,767,149	$622,807	$245,445	$245,445
Upper and Lower River Campgrounds	$0	$0	$0	$5,995,990	$5,995,990	$5,995,990
Yosemite Village Day-use Parking Area	$0	$8,486,802	$7,763,719	$7,918,376	$10,019,466	$11,844,989
Lost Arrow Employee Housing	$0	$811,650	$811,650	$7,711,355	$16,946,898	$7,711,355
Concessioner General Office Relocation	$0	$5,043,300	$5,043,300	$5,043,300	$4,925,000	4,540,000
Yosemite Lodge and Camp 4	$0	$17,460,290	$24,156,475	$28,617,726	$26,198,892	$100,779,542
West Valley Overflow Parking Area	$0	$0	$0	$0	$0	$2,040,209
El Capitan Meadow	$0	$0	$0	$926,478	$926,478	$926,478
Eagle Creek Campground (New)	$0	$0	$0	$0	$0	$6,668,792
El Portal						
Rancheria Flat and Village Center housing areas	$0	$7,258,054	$9,396,417	$15,264,905	$24,260,748	$14,763,465
Abbieville-Trailer Village	$0	$52,794,663	$4,749,936	$4,749,936	$5,305,845	$55,531,245
Wawona						
Wawona Campground	$0	$1,963,465	$1,881,298	$1,881,298	$1,651,233	$1,651,233
Miscellaneous Site-Specific Actions*						
Unique to each alternative	$0	$8,165,000	$7,830,000	$2,580,000	$2,150,000	$1,575,000
Costs Common to all the Alternatives						
From Table 8-47	$0	$6,606,193	$6,606,193	$6,606,193	$6,606,193	$6,606,193
Net Costs per Alternative	$0	$189,347,032	$136,661,880	$163,029,605	$155,864,877	$305,129,248

NOTE:
* These costs include removal of riprap (or riverbank lining), removal of informal trails, installation of engineered log jams, brush layering and willow plantings to address riverbank erosion, and other like actions.

TABLE 8-48: TOTAL PROJECT COSTS

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Total**	$0	$255,618,494	$184,493,537	$220,089,967	$210,417,585	$411,924,485

NOTE:
**Total includes net construction costs +35% to account for costs associated with follow on compliance, site monitoring and contracting. These values incorporate the common-to-all actions listed in Table 8-46

In total, the range of alternatives is priced from $184 million to $412 million when measured in current-year values. The mean (or average) cost of the range of alternatives is $256 million, while the median (or middle) value is $298 million. The preferred alternative would cost $210 million, approximately 82% of the mean cost for the entire range of alternatives. The preferred alternative is 70% of the median value.

Anticipated Total Project Costs

Natural resource protection cost estimates were developed by NPS vegetation and ecological restoration biologists who have knowledge and expertise in undertaking work of this nature. These estimates presume use of existing park staff, base-funded positions, seasonal workers, consultants, and volunteers to complete restoration work. Labor and material costs associated with actions common to all include management actions that would: remove riprap (or riverbank lining); remove abandoned infrastructure, such as bridge footings, plumbing or drainage structures; remove informal trails; loosen compacted soils; re-align trails to less sensitive areas and harden trails in other locations; install engineered log jams, brush layering and willow plantings to address riverbank erosion; remove a limited number of problem campsites; remove asphalt and concrete; provide access to the river in certain locations; restore wetlands and portions of the floodplain; and remove obsolete buildings.

Specific resource restoration projects are unique to one or more of the alternatives. Examples of these projects include: proposed actions to remove certain roadways and bridges in Alternatives 2 and 3; construct boardwalks in meadows; restore the flood plain to different levels, such as the 10-year versus 100-year elevation; remove varying amounts of infrastructure from the floodplain; and install varying numbers of engineered log jams.

Site redevelopment, improvement of existing facilities, or a limited amount of new development is proposed for the purpose of protecting river values and supporting ongoing visitor use and enjoyment. Specific sites and projects are presented in Table 8-46 and Table 8-47 and are described in more detail by project alternatives. Alternatives generally propose such actions as: adding walk-in campsites in several locations (Upper Pines, Upper and Lower River, and Camp 4 campgrounds); replacing canvas tent cabins with permanent lodging units at Curry Village; replacing temporary employee housing with permanent structures in Curry Village, Yosemite Lodge, and El Portal; removing units from Housekeeping Camp; and improving parking areas at Yosemite Village Day-use Parking Area, Yosemite Lodge, and in Wawona and El Portal.

Project alternative cost comparisons for Alternatives 2, 3, 4, 5 and 6 were generated by a senior cost estimating technical specialist and civil engineer from the Denver Service Center, one of only two agency employees who work full time in this capacity service-wide. Estimates are based upon management actions described in project alternatives and accompanying conceptual site plans. The cost estimating technician identified individual components of each project described by each of the alternatives, such as building descriptions and proposed uses, square footage, demolition or adaptive re-use of structures, site preparations and site improvements (transit connections, required roadways, parking areas, pedestrian walkways, and landscaping), and landscape enhancements for parking areas.

Cost estimates consider market prices for raw materials (sand, gravel, and stone); building materials (lumber, construction paper, roofing material); windows and doors; heat, ventilation, and air conditioning systems; plumbing and electrical fixtures; asphalt and other forms of concrete; etc. Specific costs were tabulated according to the characteristics of the development proposed.

After calculating direct construction and development costs (or direct costs), estimates were adjusted according to a number of factors that are unique to the cost of working in Yosemite National Park. These factors include: design fees and preparation of construction documents, cost of living for the region, remoteness, prevailing wage rates, state and local taxes paid by the contractor, commuting and lodging costs, special compliance requirements, contractor overhead, expectations for profit, bonds and permits, contracting method adjustments, and rates of inflation. These factors are expressed as simple percentages

known as mark-ups or add-ons resulting in net costs per unit. Costs were further adjusted to include project management costs that will otherwise accrue to the NPS, such as contracting and oversight functions, additional compliance, long-term monitoring, etc.

The full cost estimates amount to approximately 680 pages of analysis provided through detailed spreadsheets. Because of the volume and detail contained in the cost estimator's report, it is not feasible to reproduce the information within the river plan, but this information remains available for reference as part of the administrative record.

Class C cost estimates represent a broad overview of anticipated project costs. These estimates are intended to provide a realistic understanding of the full costs of project implementation. They are also intended to help decision-makers choose a preferred alternative and establish long-term budget goals. Following the anticipated approval of the Merced River Plan, Class B and Class A estimates will be completed in greater detail as project descriptions are refined and design and construction documents prepared.

Operational (or non-Facility) Costs

In order to protect and enhance river values and manage visitor use from year to year, implementation of the alternatives will require time and effort by staff resources, volunteers, or contractors. These costs may increase or decrease depending on which alternative is selected. Management actions would require varying amounts of operational maintenance, traffic and parking management, law enforcement, and other ongoing support from NPS and concessioner personnel. Park staff will be responsible for monitoring indicators and standards that are linked to river values and associated natural and cultural resources.

Approximate costs associated with operations are summarized in Table 8-49. Although specific operational costs are identified, each activity relates to monitoring programs or regular park management activities that are already conducted by existing park staff. The size of the park staff fluctuates seasonally, but the overall number of full-time employees varies from 800 in winter to approximately 1,000 in late spring and summer. Given flexibility in staffing and the size of the park's annual operating budget, operational costs are less significant than site-specific costs. They are, however, noteworthy for the purpose of comparing alternatives.

TABLE 8-49: ADDITIONAL OPERATIONAL (NON-FACILITY) COSTS

Project Component	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Cultural resources monitoring *	$0	$115,000	$115,000	$465,000	$465,000	$465,000
Facilities management and maintenance †	$0	$269,110	$315,701	$828,313	$800,079	$1,138,465
River value monitoring program †	$0	$300,000	$300,000	$300,000	$300,000	$300,000
Traffic and parking management †	$0	-$69,300	-$77,700	-$39,900	-$10,500	$8,400
Wildlife management †	$0	$0	$0	$110,000	$65,000	$150,000
* One-time cost	$0	$115,000	$115,000	$465,000	$465,000	$465,000
† Annual recurring costs	$0	$499,810	$538,001	$1,198,413	$1,154,579	$1,596,865

Cost figures presented here or elsewhere in the plan are intended to provide a general estimate of the relative costs of implementing the project alternatives. NPS and industry cost estimating guidelines were used to develop costs in 2012 dollars to a reliable and accurate extent; estimates should not be used for budgeting purposes. Specific costs will be determined in subsequent, more detailed planning and design exercises, and will consider the design of facilities, the identification of detailed resource protection needs,

changing visitor use expectations, and constraints on user capacity. Actual costs to the NPS will vary depending on timing of implementation and contributions from partners and volunteers.

The implementation of this plan, regardless of which alternative is selected, will depend on future NPS funding levels and service-wide priorities, and on partnership funds, time, and effort. The approval of this plan does not guarantee that project funding or staffing are forthcoming. Full implementation of this plan is anticipated over a period of 15 to 20 years.

COMPARISON OF USER CAPACITIES AND ALTERNATIVES ACTIONS

The following pages present summaries of alternatives as follows:

Table 8-50: Merced Wild and Scenic River Plan Alternative Summary Comparison Table

TABLE 8-50: MERCED WILD AND SCENIC RIVER PLAN ALTERNATIVE SUMMARY COMPARISON TABLE

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TABLE 8-50: MERCED WILD AND SCENIC RIVER PLAN ALTERNATIVE SUMMARY COMPARISON TABLE

Action	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Ecological Restoration						
Riprap removal	15,589 linear feet (existing)	6,664 linear feet removed	6,135 linear feet removed	6,135 linear feet removed	6,048 linear feet removed	6,048 linear feet removed
Localized Hydrologic Impacts (Bridges)	0 bridges removed	Remove 3 bridges: Ahwahnee, Sugar Pine, and Stoneman	Remove 3 bridges: Ahwahnee, Sugar Pine, and Stoneman	Remove 2 bridges: Ahwahnee, and Sugar Pine	0 bridges removed. Study further to determine if removal needed.	0 bridges removed. Use design and engineering solutions.
Meadow Connectivity (Roads)	No re-routing of roads	Remove Southside Drive through Stoneman Meadow; Remove Northside Drive through Ahwahnee Meadow	Remove Southside Drive through Stoneman Meadow; Remove Northside Drive through Ahwahnee Meadow	Remove Southside Drive through Stoneman Meadow	Roads remain. Design and engineering solutions applied.	Roads remain. Design and engineering solutions applied.
Total restoration acreage	**0 acres**	**342 acres**	**308 acres**	**225 acres**	**189 acres**	**176 acres**
Camping (Existing)						
Backpackers	25 walk-in sites	0 walk-in sites (-25 sites but partially relocated)	0 walk-in sites (-25 sites but partially relocated)	0 walk-in sites (-25 sites but partially relocated)	10 walk-in sites (-15 sites that are relocated)	10 walk-in sites (-15 sites that are relocated)
Camp 4	35 walk-in sites	35 walk-in sites	35 walk-in sites	35 walk-in sites	35 walk-in sites	35 walk-in sites
Lower Pines	76 sites	44 sites (-32 sites)	61 sites (-15 sites)	61 sites (-15 sites)	71 sites (-5 sites)	71 sites (-5 sites)
North Pines	86 sites	0 sites (ecologically restored)	52 sites (-34 sites)	52 sites (-34 sites)	72 sites (-14 sites)	72 sites (-14 sites)
Upper Pines	240 sites	216 sites (-22 sites)	238 sites (-2 sites)	238 sites (-2 sites)	238 sites (-2 sites)	238 sites (-2 sites)
Yellow Pine Administrative	4 group administrative sites	0 sites (-4 group sites)	4 group administrative sites	4 group administrative sites	4 group administrative sites	4 group administrative sites
Wawona Campground and Wawona Stock Camp	99 sites (includes 1 group site and 2 stock sites)	67 sites (-32 sites) (2 stock sites relocated to Wawona Stables)	72 sites (-27 sites) (2 stock sites relocated to Wawona Stables)	72 sites (-27 sites) (2 stock sites relocated to Wawona Stables)	86 sites (-13 sites) (2 stock sites relocated to Maintenance Yard)	86 sites (-13 sites) (2 stock sites relocated to Wawona Stables)
Total Existing Camping Sites	**565 sites**	**362 sites**	**462 sites**	**462 sites**	**516 sites**	**516 sites**
Camping (New)						
West of Backpackers Walk-in	0 sites	16 walk-in sites	16 walk-in sites	16 walk-in sites	16 walk-in sites	16 walk-in sites
East of Camp 4 Walk-in	0 sites	35 walk-in sites	35 walk-in sites	35 walk-in sites	35 walk-in sites	35 walk-in sites
Upper Pines RV-Loop	0 sites	0 sites	36 RV sites	36 RV sites	36 RV sites	36 RV sites
Upper Pines Walk-In	0 sites	0 sites	0 sites	51 sites (49 walk-in sites, 2 group sites)	51 sites (49 walk-in sites and 2 group sites)	51 sites (49 walk-in sites and 2 group sites)
Former Upper River Walk-In	0 sites	0 sites (ecologially restored)	0 (ecologically restored)	32 sites (30 walk-in sites, 2 group sites)	32 sites (30 walk-in sites, 2 group sites)	32 sites (30 walk-in sites and 2 group sites)
Former Lower River Drive-In and Walk-In	0 sites	0 sites (ecologically restored)	0 (ecologically restored)	40 walk-in sites	40 sites (30 walk-in and 10 drive-in)	40 walk-in sites
Concessioner Stables in Yosemite Valley (re-purposed as Drive-in camping)	0 sites	0 sites	0 sites	41 drive-in car sites	0 sites	0 sites
Boys Town Walk-In	0 sites	0 sites	0 sites	40 walk-in sites	0 sites	0 sites
Eagle Creek Drive-in Car and RV	0 sites	0 sites	0 sites	0 sites	0 sites	79 drive-in car and RV sites
Yosemite Lodge Walk-In (re-purposed as camping)	0 sites	104 sites (100 walk-in and 4 group sites)	0 sites	0 sites	0 sites	0 sites
West of Lodge RV Sites	0 sites	0 sites	0 sites	20 RV sites	0 sites	20 RV sites
Abbieville / Trailer Village Drive-in or RV Sites for Public and Administrative	0 sites	4 drive-in group administrative sites	0 sites	0 sites	40 sites (public and administrative)	0 sites
Total New Camping Sites Total	**0 sites**	**159 sites**	**87 sites**	**311 sites**	**250 sites**	**309 sites**
Total Camping Sites Corridorwide	**565 sites**	**521 sites**	**549 sites**	**773 sites**	**766 sites**	**825 sites**
Wilderness Camping						
Merced Lake Backpackers Camping Area; Little Yosemite Valley Camping Area; and Moraine Dome Camping Area	All three designated camping areas remain.	All three designated camping areas are discontinued. Area converted to dispersed camping.	All three designated camping areas are discontinued. Area converted to dispersed camping.	Continue designated camping areas at all three sites. (Note: Little Yosemite Valley Camping Area reduced. Merced Lake Backpackers Camping Area expanded.)	Continue designated camping areas at all three sites.	Continue designated camping areas at all three sites.
Lodging						
Curry Village Lodging Units	400 units (per Settlement Agreement, 103 lodging units not included in No Action)	433 lodging units at Curry Village; 143 hard-sided units and 290 tent cabins.	355 lodging units at Curry Village, 65 hard-sided units and 290 tent cabins. Boys Town would be ecologically restored.	355 units at Curry Village: 65 hard-sided units and 290 tent cabins. Convert Boys Town to a 40-site campground.	482 lodging units at Curry Village; 131 hard-sided units and 351 tent cabins.	453 lodging units at Curry Village; 163 hard-sided units and 290 tent cabins.
Yosemite Lodge	245 rooms	0 rooms (-245 rooms with area re-purposed as day lodge and camping)	143 rooms (-102 rooms comprised in 4 buildings removed from 100-year floodplain)	245 rooms	245 rooms	440 rooms (construct multiple 3-story lodging structures outside the 100-year floodplain).

Action	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Housekeeping Camp	266 units	0 units (-266 units: Convert to river access and picnicking, and ecologically restore 100-year floodplain)	0 units (-266 units: Convert to river access and picnicking, and ecologically restore 100-year floodplain)	100 units (-166 units: Removed from seasonally inundated areas and within the ordinary high-water mark)	232 units (-34 units: Removed from bed and banks)	232 units (-34 units: Removed from bed and banks)
Ahwahnee Hotel	123 rooms	123 rooms	123 rooms	123 rooms	123 rooms	123 rooms
Wawona Hotel	104 rooms	104 rooms	104 rooms	104 rooms	104 rooms	104 rooms
Merced Lake High Sierra Camp	22 units (60 beds)	0 units (lodging facility closed and re-purposed as camping)	15 people (lodging converted to temporary pack camp)	0 units (lodging facility removed and ecologically restored)	11 units (-18 beds)	22 units (60 beds)
Lodging Totals (units)	**1,160 units**	**660 units**	**725 units**	**927 units**	**1,197 units**	**1,374 units**
Transportation						
Curry Orchard Parking Area	424 spaces	420 spaces	300 spaces	300 spaces	415 spaces	430 spaces
Yosemite Village Day-use Parking Area	754 spaces	550 spaces (parking moved north)	550 spaces (parking moved north)	750 spaces (parking moved north)	750 spaces (parking moved north)	850 spaces (parking moved north)
Yosemite Lodge: Converted to Day Lodge	0 spaces	250 spaces	0 spaces	0 spaces	0 spaces	0 spaces
Yosemite Lodge Parking Area	0 spaces	150 spaces	150 spaces	150 spaces	300 spaces	300 spaces
West Valley Overflow Parking Area	No	No	No	No	No	250 spaces
Total Parking for Yosemite Valley Day Use	2,337 spaces (0% change)	1,800 spaces (-23% change)	1,597 spaces (-31% change)	2,045 spaces (-13% change)	2,520 spaces (+8% change)	2,698 spaces (+11% change)
El Portal Remote Visitor Parking	No	No	No	200 spaces	300 spaces	200 spaces
Roundabouts / Traffic Circles (at Yosemite Village Day-use Parking Area)	No	No	No	No	Traffic Circle: Northside Drive and Village Drive	Roundabout: Northside Drive and Village Drive; Roundabout: Northside Drive and Sentinel Drive (at Bank 3-Way)
Grade-separated Pedestrian Crossings	No	No	No	Yosemite Falls Crossing	Yosemite Falls Crossing	Yosemite Village Day-use Parking Area Crossing; Yosemite Falls Crossing
Employee Housing						
Temporary Housing Units Removed (all occurring within Yosemite Valley)	- 0 beds	- 519 beds	- 489 beds	- 469 beds	- 477 beds	- 439 beds
Permanent Replacement Housing (in Yosemite Valley)	+ 0 beds	+ 164 beds	+ 268 beds	+ 318 beds	+ 191 beds	+ 318 beds
Concession Employee Beds (in Yosemite Valley)	1,151 employees	494 employees	922 employees	923 employees	865 employees	972 employees
Permanent Replacement Housing (in El Portal)	+ 0 beds	+ 426 beds	+ 31 beds	+ 108 beds	+ 160 beds	+ 314 beds
Parking						
Daily Visitation to East Yosemite Valley (Day and Overnight)	20,900 visitors	13,900 visitors	13,200 visitors	17,000 visitors	20,100 visitors	21,800 visitors
Total Parking (administrative, day, and overnight) for Access to Yosemite Valley	5,200 spaces	4,000 spaces	4,300 spaces	4,800 spaces	5,660 spaces	5,800 spaces
Cost Estimates						
Total Project Costs	**$0 (if no actions taken)**	**$255,618,494**	**$184,493,537**	**$220,089,967**	**$210,417,585**	**$411,924,485**

COMPREHENSIVE RIVER VALUE ANALYSIS

INTRODUCTION

Consistent with Section 10(a) of WSRA, Alternatives 2-6 give primary emphasis to protecting the river's "esthetic, scenic, historic, archeological and scientific [biological, geologic, and hydrologic] features" by including actions to address conditions highlighted in "River Values and Their Management" (Chapter 5).

While many of the actions proposed in this plan are designed to improve the condition of individual river values, this section examines the collective impact of all actions to ensure that the consequences of actions to protect one resource do not have unintended impacts to others. The combination of actions included in each alternative to protect river values (described in Chapter 5), coupled with the user capacity management program and actions related to land use and facilities, are evaluated here for their overall net effect on each river value. These effects are compared with the measures of adverse impact and degradation provided in Chapter 5 to verify the conclusion that all alternatives will protect and enhance all river values and meet the intent of WSRA.

This analysis is organized by river value, beginning with free-flowing condition and water quality, and then discusses each of the twenty Merced River ORVs in numerical order. For some river values, such as archeological resources, the application of standard mitigation measures and best management practices will adequately address concerns about protecting the ORV. In these cases, the collective effect of the actions within each alternative can be summarized in a short statement. Other river values, such as meadows and riparian habitat, can be impacted to varying degrees depending on both the location and intensity of action. In these situations, more detail is provided on the proposed actions in order to fully examine all potential impacts. Alternative 1 (No Action) is not included in this analysis and all reference to "alternatives" pertains only to the action alternatives (Alternatives 2-6).

To prevent future adverse impacts, the NPS would regularly monitor river value conditions and take management action when specific thresholds are reached. A comprehensive monitoring program (described in Chapter 5) is a component of all action alternatives.

RIVER VALUE – FREE-FLOWING CONDITION (ALL SEGMENTS)

As described in Chapter 5, the free-flowing condition of the Merced River in all segments has been protected and improved since designation. However, some localized effects on river flow remain due to riprap revetment, abutments, and abandoned infrastructure within the bed and banks of the river. At a minimum, all alternatives include a suite of actions to enhance the free-flowing condition of the river. These actions include removing at least 5,700 linear feet of riprap and removing abandoned and unnecessary infrastructure from the river channel and its floodplain. Infrastructure that would be removed under all alternatives includes former sewage treatment facilities, sewer and water lines, and former bridge abutments. Other actions included in the alternatives to protect and enhance river values would not impact the free-flowing condition of the river. All such actions that are located within the bed and banks of the river or within the 100-year floodplain have been proposed solely to improve the function of the river.

There are no new facilities proposed within the river channel under any alternative. Each alternative features additional actions related to existing facilities that would enhance the connectivity of the river and its floodplain (see the discussion of Hydrological/Geological ORVs later in this section).

Conclusion: The free-flowing condition of the Merced River would be protected and enhanced on a segmentwide scale, under all action alternatives. Moreover, the NPS would subject all future projects within the bed or banks of the Merced River or its tributaries to an analysis conducted in accordance with Section 7 of WSRA to ensure that such projects would not lead to "direct or adverse impacts" on free flow, and that projects on tributaries to the river did not "invade or unreasonably diminish" the river's free flowing condition.

RIVER VALUE – WATER QUALITY (ALL SEGMENTS)

The water quality of the Merced River is extremely high, and the current water quality of the river is protected and enhanced on a segmentwide scale in all river segments. Intermittent localized instances of contamination may occur in connection with surface water runoff from parking areas, recreational vehicle dump stations in proximity to the river, and accelerated erosion with potential sediment loading in the river during high water flows.

All alternatives would apply mitigation measures to ensure that surface water runoff associated with parking areas is adequately managed to protect the water quality of the Merced River and meet regulations. In particular, the Yosemite Village Day-use Parking Area would be moved at least 150 feet from the ordinary high-water mark. Additionally, potential sources of contamination, including the recreational vehicle dump stations at Upper Pines and Wawona, would be moved away from the river; the Odger's bulk fuel storage facility in El Portal would be moved out of the 500-year floodplain; and all campsites within 100 feet of the ordinary high-water mark will be removed. The stock trail from the Concessioner Stables to Happy Isles would also be re-routed away from the river under all alternatives. These actions would reduce erosion along the riverbank, reduce use in sensitive areas, direct use to resilient areas, and mitigate potential sources of pollutants. Other actions unique to each alternative increase the width of these setbacks and further increase the protection and enhancement of water quality.

Comprehensive ecological restoration actions designed to protect and enhance the Biological ORV 2 and the Geological/Hydrological ORV 6 would take place along the riverbank and floodplain of the Merced River under all alternatives. These actions would enhance water quality, particularly the actions that re-establish riverbank vegetation and reduce erosion potential. Ecological restoration actions are described in more detail in the discussion of these ORVs below and in Appendix E.

There are no facilities proposed under any alternative that would negatively affect water quality in the Merced River. Several actions related to existing and new facilities will reduce the potential for localized water contamination (see Chapter 7 and the discussion of Biological ORV 2 and Hydrological/Geological ORV 6 later in this section).

As outlined in Chapter 5, to prevent future adverse impacts, the NPS would regularly monitor water quality and take management action when specific thresholds are reached. This monitoring program is part of all action alternatives.

Conclusion: As discussed in Chapter 9 (Impact topic: Hydrology, Floodplains and Water Quality), any impacts to water quality from all actions proposed in the *Final Merced River Plan/EIS* are local and negligible. Thus, this river value will remain protected on a segmentwide scale under all action alternatives.

ORV 1 (BIOLOGICAL) – HIGH-ELEVATION MEADOWS AND RIPARIAN HABITAT

The Merced River sustains numerous small meadows and riparian habitat with high biological integrity in the wilderness segments (Segments 1 and 5) of the river corridor. As documented in Chapter 5, ORV 1 is not adversely impacted or degraded and current conditions meet or exceed the management standard. A management concern exists in Segment 1, with regard to the amount of bare soil evident in the Merced Lake East Meadow. All alternatives address this concern by either prohibiting grazing or limiting the number of stock nights allowed to use the meadow for this purpose.

In Segment 1, all alternatives remove informal trails that incise meadow habitat, trails in wet and/or sensitive vegetation, and trails that fragment meadow habitat. Removal of social trails that bisect the meadows would enhance Biological ORV 1 by reducing soil compaction and habitat fragmentation. Localized concerns related to the High Sierra Camp (see Chapter 7) would be addressed by the actions described above. No other effects on Biological ORV 1 have been identified due to the presence of the High Sierra Camp infrastructure or the limited facilities provided at the camping areas. While the alternatives vary in their treatment of these areas, no expansion in the development footprint is proposed. Actions that reduce the size and use of these facilities may provide some localized benefit to Biological ORV 1 by dispersing visitor use.

Under all alternatives, the wild segment of the Merced River above Nevada Fall would show little evidence of human activity and remain largely free of infrastructure. Facilities that would remain in this segment of the river include the Merced Lake High Sierra Camp (under Alternatives 5 and 6), the Merced Lake Ranger Station, and the Little Yosemite Valley trail crew and ranger camp. The existence of this infrastructure is not causing an adverse impact to Biological ORV 1 (see Chapters 5 and 7).

In Segment 5, restoration actions to protect cultural resources proposed under this alternative (removal of informal trails and charcoal rings) would not affect high-elevation meadows. Moreover, no major facility or visitor use actions are proposed for Segment 5 under any alternative. Thus, Biological ORV 1 in this segment would remain protected under all alternatives.

As outlined in Chapter 5, to prevent future adverse impacts, the NPS would regularly monitor the condition of Biological ORV 1 and take management action when specific thresholds are reached. This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Biological ORV 1 would remain free of adverse impacts and degradation on a segmentwide scale. All alternatives propose actions to further enhance the condition of meadow and riparian habitat and none propose actions that will impact such habitat at a localized or segmentwide scale. Any future impacts from continued visitor use in Segment 1 will be identified and corrected under the monitoring program described in Chapter 5. The primary actions and their effects on Biological ORV 1 are summarized in Table 8-51.

TABLE 8-51: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 1 BY ALTERNATIVE

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 1
Merced Lake High Sierra Camp	Remove all facilities at the High Sierra Camp and ecologically restore the area.	Change removes concentrated visitor use near riverbank which could enhance ORV 1 by reducing trampling and erosion.
Private boating would be allowed in this segment	Boating would consist of short floats using pack raft or other craft that can easily be carried. Put-ins and take-outs would be dispersed. Boating would be limited by wilderness zone capacities.	Low use levels and stewardship education associated with permit process would protect riparian habitat from trampling and bank erosion. ORV 1 would remain protected on a segmentwide scale.
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range zones would remain the same across all the alternatives. Manage to a reduced capacity of 25 in the Little Yosemite Valley (LYV) Wilderness Zone.	Current zone capacities are designed to protect wilderness character including natural conditions such as riverbanks and meadows. Lower capacity in LYV could enhance riparian habitat by reducing trampling and erosion.
LOCATION AND LAND USE	**ALTERNATIVE 3 ACTIONS**	**EFFECTS ON ORV 1**
Merced Lake High Sierra Camp	Convert to a temporary pack camp with a maximum of 15 people per night and remove permanent infrastructure in the area.	Change removes concentrated visitor use near riverbank which could enhance ORV 1 by reducing erosion and trampling.
Private boating would be allowed in this segment	Boating would consist of short floats using pack raft or other craft that can easily be carried. Put-ins and take-outs would be dispersed. Boating would be limited by wilderness zone capacities.	Low use levels and stewardship education associated with permit process would protect riparian habitat from trampling and bank erosion. ORV 1 would remain protected on a segmentwide scale.
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range zones would remain the same across all the alternatives. Manage to a reduced capacity of 75 in the Little Yosemite Valley (LYV) Wilderness Zone.	Current zone capacities are designed to protect wilderness character including natural conditions such as riverbanks and meadows. Lower capacity in LYV could enhance riparian habitat by reducing trampling and erosion.
LOCATION AND LAND USE	**ALTERNATIVE 4 ACTIONS**	**EFFECTS ON ORV 1**
Merced Lake High Sierra Camp	Remove all facilities at the High Sierra Camp and ecologically restore the area.	Change removes concentrated visitor use near riverbank which could enhance ORV 1 by reducing erosion and trampling.
Private boating would be allowed in this segment	Boating would consist of short floats using pack raft or other craft that can easily be carried. Put-ins and take-outs would be dispersed. Only five boats per day allowed - permit would be required.	Low use levels and stewardship education associated with permit process would protect riparian habitat from trampling and bank erosion. ORV 1 would remain protected on a segmentwide scale.
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range zones would remain the same across all the alternatives. Manage to a reduced capacity of 100 in the Little Yosemite Valley Wilderness Zone.	Zone capacities are designed to protect wilderness character including natural conditions such as riverbanks and meadows. Lower capacity in LYV could enhance riparian habitat by reducing trampling and erosion.
LOCATION AND LAND USE	**ALTERNATIVE 5 ACTIONS**	**EFFECTS ON ORV 1**
Merced Lake High Sierra Camp	Reduce the Merced Lake High Sierra Camp to 11 units (42 beds). Replace the flush toilets with composting toilet.	Facility is not directly adjacent to meadows. Changes would not affect high-elevation meadow and riparian habitat. ORV 1 would remain protected on a segmentwide scale.

TABLE 8-51: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 1 BY ALTERNATIVE

Private boating would be allowed in this segment	Boating would consist of short floats using craft that can easily be carried. Put-ins and take-outs would be dispersed. Private use limited to 20 people per day with backcountry permits.	Low use levels and stewardship education associated with permit process would protect riparian habitat from trampling and bank erosion.
LOCATION AND LAND USE	**ALTERNATIVE 5 ACTIONS**	**EFFECTS ON ORV 1**
Wilderness zone capacity	All zone capacities within the Merced WSR corridor remain the same as currently managed.	Current zone capacities are designed to protect wilderness character including natural conditions such as riverbanks and meadows. Action would not affect high-elevation meadow and riparian habitat. ORV 1 would remain protected on a segmentwide scale.
LOCATION AND LAND USE	**ALTERNATIVE 6 ACTIONS**	**EFFECTS ON ORV 1**
Merced Lake High Sierra Camp	Replace the flush toilets with composting toilet.	Facility is not directly adjacent to meadows. Changes would not affect high-elevation meadow and riparian habitat. ORV 1 would remain protected on a segmentwide scale.
Private boating would be allowed in this segment	Boating would consist of short floats using craft that can easily be carried. Put-ins and take-outs would be dispersed. Private use limited to 20 people per day with backcountry permits.	Low use levels and stewardship education associated with permit process would protect riparian habitat from trampling and bank erosion. ORV 1 would remain protected on a segmentwide scale.
Wilderness zone capacity	All zone capacities included in the Merced River Corridor remain the same as currently managed.	Current zone capacities are designed to protect wilderness character including natural conditions such as riverbanks and meadows. Action would not affect high-elevation meadow and riparian habitat. ORV 1 would remain protected on a segmentwide scale.

ORV 2 (BIOLOGICAL) – MID-ELEVATION MEADOWS AND RIPARIAN HABITAT

This ORV includes the meadows and riparian communities of Yosemite Valley (Segments 2A and 2B)—one of the largest mid-elevation meadow-riparian complexes in the Sierra Nevada. As documented in Chapter 5, Biological ORV 2 is not adversely impacted or degraded, and current conditions meet or exceed the management standard. However, management concerns are present due to the presence of riverbank trampling, riverbank erosion, and fragmentation index scores at Cook's A, El Capitan, Leidig, and Sentinel A Meadows and. All alternatives would address these concerns with the following actions:

For management concerns related to meadow fragmentation (with priority given to the meadows identified above):

- Remove informal trails where they fragment meadow habitat or cross through sensitive, wet vegetation communities. Overall, restore six miles of informal trails throughout Yosemite Valley.
- Use boardwalks, hardened surfaces, or other techniques to provide access to sensitive areas.
- Delineate trails through upland areas and along meadow perimeters.
- Place restoration closure signs and/or fencing along meadow perimeters.
- Fill deep headcuts caused by informal trails with native soil and re-contour to natural meadow topography.

- De-compact trampled soils, and use salvaged plants and local seed to re-vegetate area and consolidate parallel trails.
- Institute closures in individual impacted meadows and increase visitor education associated with the closures.

For management concerns related to riparian habitat:

- Re-vegetate riverbanks between Clark's Bridge and Sentinel Bridge with native riparian shrubs and trees, and strategically place wood to promote bar formation and natural channel narrowing.
- Re-direct visitor use to more stable and resilient river access points such as sandbars, and designate formal river access sites. Establish fencing and signage to protect sensitive areas; install boardwalks where appropriate, and actively re-vegetate where needed.
- At a minimum, remove all campsites within 100 feet of the ordinary high water mark. Restore these areas to natural riparian conditions.
- Establish a riparian buffer and prohibit new development along both sides of the Merced River within 150 feet of the ordinary high water mark.
- Move the Yosemite Village Day-use Parking Area at least 150 feet north of the ordinary high water mark.
- Construct hardened structures at designated river access points to facilitate and concentrate safe visitor access (where needed). Fence and sign sensitive areas and re-establish riparian vegetation.

Under all alternatives, existing facilities with localized effects to Biological ORV 2 (as described in Chapter 7) would be modified or removed to mitigate these effects. As a result, the facilities that remain would have no effect on ORV 2.

To prevent future adverse impacts, the NPS would regularly monitor the condition of Biological ORV 2 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Biological ORV 2 would remain free of adverse impacts and degradation on a segmentwide scale. A robust program of ecological restoration is common to all alternatives and was developed to address localized concerns about meadow and riparian health within Segments 2A and 2B. All alternatives propose additional actions to further enhance the condition of meadow and riparian habitat; none propose actions that will impact such habitat at a segmentwide scale. Any future impacts from continued visitor use in this segment will be identified and corrected under the monitoring program described in Chapter 5. The primary actions and their implications for Biological ORV 2 are described below.

Alternative 2

Under Alternative 2 (Table 8-52), Biological ORV 2 would remain free of adverse impacts and degradation on a segmentwide scale. Most actions would further enhance the condition of riverbanks and meadows. Removal or relocation of select campsites and infrastructure would improve meadow conditions, thereby enhancing ORV 2.

TABLE 8-52: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 2)

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 2
Curry Village and Campgrounds		
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within the 100-year floodplain; establish designated raft put-ins.	Changes would reduce erosion along the riverbank by designating access points in resilient areas and discouraging use of sensitive areas. ORV 2 would be enhanced.
Stoneman Meadow and Curry Orchard parking lot	Remove 1,335 feet of Southside Drive and re-align road through Boys Town area. Redesign the Orchard Parking Lot. Remove apple trees and replace with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275').	Changes would promote water flow and improve meadow health, thereby enhancing ORV 2.
New campsites at Yosemite Lodge, Backpackers, and Camp 4	Construct new campsites at Backpackers, Camp 4, and Yosemite Lodge (outside of the 100- year floodplain).	Changes would protect riparian areas from direct impacts related to the increase in visitor activity in these areas. Fencing and designated river access points would also direct use to resilient areas. ORV 2 would remain protected at a segmentwide scale.
Ahwahnee, Sugar Pine, and Stoneman Bridges	Remove the Ahwahnee, Sugar Pine, and Stoneman Bridges and the associated berms, and restore to natural conditions. Reroute the multiple use trail to the north bank of the river. Re-route utilities under Ahwahnee Bridge.	Change would reduce channel widening, erosion, and scouring, thereby enhancing ORV 2.
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area out of the 10-year floodplain to facilitate restoration goals. Formalize parking area with a total of 550 parking spaces.	Changes would reduce effects to the riparian area and enhance ORV 2, as use would be moved away from areas critical to river or meadow function. ORV 2 would be enhanced.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day-use area, river access point, and picnic area. River access would be directed to resilient sandy beaches.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Remove housing and development, re-contour topography, de-compact soils, and restore stream hydrologic function.	Changes would remove infrastructure within the 100-year floodplain, thereby enhancing floodplain and hydrologic processes. ORV 2 would remain protected on a segmentwide scale.
Northside Drive (Stoneman Bridge to Yosemite Village Day-use Parking Area)	Remove 900' of road and relocate the bike path to the south.	Changes would improve meadow/river connectivity, thereby enhancing ORV 2.
Sentinel Drive Roadside Parking	Remove roadside parking along Sentinel Drive and restore to natural conditions.	Changes would remove uses from the meadow edge and reduce erosion and trampling, thereby enhancing ORV 2.
Yosemite Lodge and Camp 4		
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	Change would reduce informal trailing in the adjacent meadow, thereby enhancing ORV 2.

Alternative 3

Under Alternative 3 (Table 8-53), Biological ORV 2 would remain free of adverse impacts and degradation on a segmentwide scale. Most actions would further enhance the condition of riverbanks and meadows. Removal or relocation of select campsites and infrastructure would improve meadow conditions, thereby enhancing ORV 2.

TABLE 8-53: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 2
Curry Village and Campgrounds		
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within the 100-year floodplain. Establish designated raft put-ins.	Changes would reduce erosion along the riverbank by designating access points in resilient areas and discouraging use of sensitive areas. ORV 2 would be enhanced.
New campsites at Upper Pines, Backpackers, and Camp 4	Construct new campsites at Upper Pines, Backpackers, and Camp 4 outside of the 150-foot riparian buffer.	Changes would protect riparian areas from direct impacts related to the increase in visitor activity in these areas. Fencing and designated river access points would also direct use to resilient areas. ORV 2 would remain protected at a segementwide scale.
Stoneman Meadow and Curry Orchard parking lot	Remove 1,335 feet of Southside Drive and re-align road through Boys Town area. Re-design the Orchard Parking Lot. Remove apple trees and landscape with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275').	Changes would promote water flow and improve meadow health, thereby enhancing ORV 2.
Ahwahnee, Sugar Pine, and Stoneman bridges	Remove the Ahwahnee, Sugar Pine, and Stoneman bridges, and the associated berms and restore to natural conditions. Reroute the multiple use trail to the north bank of the river. Re-route utilities under Ahwahnee Bridge.	Changes would promote water flow and improve meadow health, thereby enhancing ORV 2.
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area out of the 10-year floodplain to facilitate restoration goals. Formalize parking area with a total of 550 parking spaces.	Changes would reduce effects to the riparian area and enhance ORV 2, as use would be moved away from areas critical to river or meadow function. ORV 2 would be enhanced.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day-use area, river access point, and picnic area. River access would be directed to resilient sandy beaches.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Ahwahnee Row and Tecoya Dorms Concessioner Housing	Establish a 50-foot setback from Indian Creek; ecologically restore the riparian habitat and protect by restoration fencing.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Northside Drive (Stoneman Bridge to Yosemite Village Day-use Parking Area)	Remove 900 feet of road and relocate the bike path to the south.	Changes would improve meadow/river connectivity, thereby enhancing ORV 2.
Sentinel Drive Roadside Parking	Remove roadside parking along Sentinel Drive and restore to natural conditions.	Changes would remove uses from the meadow edge and reduce erosion and trampling, thereby enhancing ORV 2.
Yosemite Lodge and Camp 4		
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	Change would reduce informal trailing in the adjacent meadow, thereby enhancing ORV 2.

Alternative 4

Under Alternative 4 (Table 8-54), Biological ORV 2 would remain free of adverse impacts and degradation on a segmentwide scale. All actions would further enhance the condition of riverbanks and meadows. Removal or relocation of select campsites and infrastructure would improve meadow conditions, thereby enhancing ORV 2. Effects on the alluvial nature of the river caused by the bridges retained in this alternative would be mitigated through constructed log jams.

TABLE 8-54 :SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 2
Curry Village and Campgrounds		
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 150 feet of the river. Establish designated raft put-ins.	Changes would reduce erosion along the riverbank by designating access points in resilient areas and discouraging use of sensitive areas. ORV 2 would be enhanced.
Stoneman Meadow and Curry Orchard parking lot	Remove 1,335 feet of Southside Drive and re-align road through Boys Town area. Redesign the Orchard Parking Lot. Remove apple trees and replace with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275').	Changes would promote water flow and improve meadow health, thereby enhancing ORV 2.
New campsites at Upper Pines, Backpackers, Concessioner Stables, Camp 4, West of Lodge, Boys Town, and Upper and Lower River Campgrounds	Construct new campsites outside of the 150-foot riparian buffer at Upper Pines, Upper River, Lower River, Backpackers, Camp 4, West of Lodge, Boys Town, and Concessioner Stables. Designate river access at Lower River at Housekeeping Camp eastern beach.	Changes would protect riparian areas from direct impacts related to the increase in visitor activity in these areas. Fencing and designated river access points would also direct use to resilient areas. ORV 2 would remain protected at a segementwide scale.
Ahwahnee and Sugar Pine Bridges	Remove the Ahwahnee and Sugar Pine Bridges and the associated berm, and restore to natural conditions. Reroute the multiple-use trail to the north bank of the river. Re-route utilities under Ahwahnee Bridge.	Changes would promote water flow and improve meadow health, thereby enhancing ORV 2.
Yosemite Village and Housekeeping Camp		
Housekeeping Camp Lodging	Remove 166 lodging units (seasonally inundated), 4 restrooms, and the store and office. River access would be directed to resilient sandy beaches.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Sentinel Drive Roadside Parking	Remove roadside parking along Sentinel Drive and restore to natural conditions.	Changes would remove uses from the meadow edge and reduce erosion and trampling, thereby enhancing ORV 2.
Ahwahnee Row and Tecoya Dorms Concessioner Housing	Establish a 50-foot setback from Indian Creek; ecologically restore the riparian habitat and protect with fencing.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Yosemite Lodge and Camp 4		
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	Change would reduce informal trailing in the adjacent meadow, thereby enhancing ORV 2.
Yosemite Lodge: Intersection Congestion	A tiered NEPA / NHPA compliance effort will evaluate a range of alternatives to develop a grade-separated crossing.	Implementation of mitigation measures would protect the riparian corridor from erosion, pollutants, and general habitat disturbance during construction. ORV 2 would remain protected at a segmentwide scale.

Alternative 5

Under Alternative 5 (Table 8-55), Biological ORV 2 would remain free of adverse impacts and degradation on a segmentwide scale. Actions would further enhance riverbanks and meadows. Removal or relocation of select campsites and infrastructure would improve meadow conditions in these segments, thereby enhancing ORV 2. Constructed log jams would mitigate the effects on the alluvial nature of the river caused by the bridges retained under this alternative.

TABLE 8-55: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 2
Curry Village and Campgrounds		
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 100 feet of the river. Establish designated raft put-ins.	Changes would reduce erosion along the riverbank by designating access points in resilient areas and discouraging use of sensitive areas. ORV 2 would be enhanced.
New campsites at Upper Pines, Backpackers, Camp 4, and Lower and Upper River Campgrounds	Construct new campsites outside of the 150-foot riparian buffer at Upper Pines, Lower River, Upper River, Backpackers, and Camp 4. Designate river access at Lower River Housekeeping Camp eastern beach. Design plans would incorporate a boating access point and commercial raft launch site.	Changes would protect riparian areas from direct impacts related to the increase in visitor activity in these areas. Fencing and designated river access points would also direct use to resilient areas. ORV 2 would remain protected.
Curry Orchard Day-use Parking Area	Provide 415 parking spaces through a re-design of the parking lot. Apply engineering solutions to promote water flow to Stoneman Meadow.	Changes will increase drainage to Stoneman Meadow, protecting and improving meadow health and enhancing ORV 2.
Ahwahnee, Stoneman, and Sugar Pine Bridges	Strategically place large wood on riverbanks, and use brush layering and constructed log jams to address scouring. A scientific study would be completed to develop a strategic approach to achieving successful protection of hydrologic processes and free-flowing conditions in the vicinity of Sugar Pine Bridge.	Changes will mitigate existing riparian impacts, thereby enhancing ORV 2.
Yosemite Village and Housekeeping Camp		
Housekeeping Camp Lodging	Remove 34 units from within the ordinary high-water mark. River access would be directed to resilient sandy beaches.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Ahwahnee Row and Tecoya Dorms Concessioner Housing	Establish a 50-foot setback from Indian Creek; ecologically restore the riparian habitat and protect with fencing.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Sentinel Drive Roadside Parking	Remove roadside parking along Sentinel Drive and restore to natural conditions.	Changes would remove uses from the meadow edge and reduce erosion and trampling, thereby enhancing ORV 2.
Yosemite Village Day-use Parking Area/Roundabout	Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate restoration goals. Formalize parking area with a total of 750 parking spaces. Build a roundabout at the intersection of Northside Drive and Village Drive to address traffic congestion at this intersection.	The extent of construction would minimally encroach into Cook's Meadow; however riparian and wetland habitat would be enhanced by moving development away from the river and wetland areas. Mitigation measures would protect sensitive areas from staging impacts such as compaction and erosion. While Cook's Meadow may be affected at a localized scale, ORV 2 would remain protected at a segmentwide scale.

TABLE 8-55: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 2
Yosemite Lodge And Camp 4		
Superintendent's House (Residence 1)	Remove the historic Superintendent's House and Garage.	Change would reduce informal trailing in the adjacent meadow, thereby enhancing ORV 2.
Yosemite Lodge: Intersection Congestion	A tiered NEPA / NHPA compliance effort will evaluate a range of alternatives to develop a grade-separated crossing.	Implementation of mitigation measures would protect the riparian corridor from erosion, pollutants, and general habitat disturbance during construction. ORV 2 would remain protected at a segmentwide scale.

Alternative 6

Under Alternative 6 (Table 8-56), Biological ORV 2 would continue to be absent of adverse impacts and degradation on a segmentwide scale. Actions would further enhance riverbanks and meadows. Removal or relocation of select campsites and infrastructure would improve meadow conditions in these segments, thereby enhancing ORV 2. Constructed log jams would mitigate the effects on the alluvial nature of the river caused by the bridges retained under this alternative.

TABLE 8-56: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 2
Curry Village and Campgrounds		
North, Lower, and Upper Pines Campgrounds and Backpackers Campgrounds	Remove all campsites within 100 feet of the river. Establish designated raft put-ins.	Changes would reduce erosion along the riverbank by designating access points in resilient areas and discouraging use of sensitive areas. ORV 2 would be enhanced.
Stoneman Meadow and Curry Orchard Parking Lot	Provide 430 parking spaces through a re-design of the parking lot. Apply engineering solutions to promote water flow to Stoneman Meadow.	Changes will increase drainage to Stoneman Meadow, protecting and improving meadow health and enhancing ORV 2.
New campsites at Upper Pines, Backpackers, Camp 4, Eagle Creek, and Upper and Lower River Campgrounds	Construct new campsites outside the 150-foot riparian buffer at Upper Pines, Upper River, Lower River, Backpackers, Eagle Creek and Camp 4.	Changes would protect riparian areas from direct impacts related to the increase in visitor activity in these areas. Fencing and designated river access points would also direct use to resilient areas. ORV 2 would remain protected.
Ahwahnee, Stoneman, and Sugar Pine Bridges	Existing riparian impacts mitigated with strategic placement of large wood on riverbanks, and the use of brush layering and constructed log jams to address scouring.	Changes would increase channel complexity and reduce channel widening, erosion, and scouring, thereby enhancing ORV 2.
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate restoration goals. Formalize parking area with a total of 850 parking spaces. Two traffic roundabouts, one at the Village Drive and Northside Drive intersection and one at the intersection of Sentinel Drive and Northside Drive, would be needed. A pedestrian underpass would be constructed to address traffic congestion and pedestrian/vehicle conflicts.	The extent of construction would minimally encroach into Cook's Meadow; however wetlands would be restored by moving development away from the river. Mitigation would compensate wetland loss and protect sensitive areas from staging impacts such as compaction and erosion. ORV 2 would remain protected at a segmentwide scale.

TABLE 8-56: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR BIOLOGICAL ORV 2 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 2
Housekeeping Camp Lodging	Remove 34 units from within the ordinary high-water mark. River access would be directed to resilient sandy beaches.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Ahwahnee Row and Tecoya Dorms Concessioner Housing	Establish a 50-foot setback from Indian Creek; ecologically restore the riparian habitat and protect with fencing.	Changes would reduce erosion and trampling impacts in riparian area, thereby enhancing ORV 2.
Sentinel Drive Roadside Parking	Remove roadside parking along Sentinel Drive and restore to natural conditions.	Changes would remove uses from the meadow edge and reduce erosion and trampling, thereby enhancing ORV 2.
Yosemite Lodge and Camp 4		
Yosemite Lodge Road and Northside Drive	Construct a pedestrian underpass to address congestion at intersection and alleviate pedestrian/vehicle conflicts. Roadside parking would be removed and more culverts would be added.	Implementation of mitigation measures would protect the riparian corridor from erosion, pollutants, and general habitat disturbance during construction. ORV 2 would remain protected at a segmentwide scale.
Yosemite Lodge Visitor Facilities	Reconstruct Yosemite Lodge with the pre-flood number of 440 units and locate outside of the 100-year floodplain.	New and existing lodging would be located outside the 100-year floodplain and would not affect meadow or riparian habitat; ORV 2 would remain protected at a segmentwide scale.

ORV 3 (BIOLOGICAL) –SIERRA SWEET BAY

As documented in Chapter 5, the Sierra sweet bay population (Segments 7 and 8) is not adversely impacted or degraded and current conditions meet or exceed the management standard. Therefore, management actions to protect this ORV are not required at this time. As discussed in Chapter 9 (Impact topic: Special Status Species), all of the action alternatives would result in local, long-term, minor beneficial impacts on special-status plants in Segments 5-8. Thus, the collective impact to ORV 3 from all actions proposed in the *Final Merced River Plan/EIS* is positive; the ORV would be protected on a segmentwide scale under all alternatives.

ORV 4 (GEOLOGICAL/HYDROLOGICAL) – GLACIALLY-CARVED CANYON IN THE UPPER MERCED RIVER CANYON

As documented in Chapter 5, the glacially-carved canyon of the Upper Merced River (Segment 1) is not adversely impacted or degraded. No actions are proposed in any alternative that are substantial enough to affect this ORV. Because it is essentially impervious to human activities, the NPS has not set a management standard for ORV 4 and further management action is not required to protect this ORV. Natural processes will continue to shape this geologic feature and the ORV would be protected on a segmentwide scale under all alternatives.

ORV 5 (GEOLOGICAL/HYDROLOGICAL) – THE "GIANT STAIRCASE"

As documented in Chapter 5, the "Giant Staircase" which includes Vernal and Nevada Falls (Segment 2A), is not adversely impacted or degraded. No actions are proposed in any alternative that are substantial enough to affect this ORV. Because it is essentially impervious to human activities, the NPS has not set a management standard for ORV 5 and further management action is not required to protect this ORV.

Natural processes will continue to shape this geologic feature and the ORV would be protected on a segmentwide scale under all alternatives.

ORV 6 (GEOLOGICAL/HYDROLOGICAL) – RARE, MID-ELEVATION ALLUVIAL RIVER

Alluvial rivers are self-formed, meaning that their channels are shaped by the magnitude and frequency of the floods they experience and the ability of those floods to erode, deposit, and transport sediment. This ORV includes the river reach from Happy Isles to the west end of Yosemite Valley, where the river has a gentle gradient, a robust flood regime, and complex riparian vegetation. There are few examples in the Sierra Nevada of similar river morphology of this scale at this elevation.

As documented in Chapter 5, the alluvial nature of the Merced River in Yosemite Valley (Segments 2A and 2B) is not adversely impacted or degraded; current conditions meet or exceed the management standard. However, management concerns are present due to the status of riparian habitat. This management concern is the same as that reported for ORV 2 (see discussion on ORV 2 for details).

All alternatives include the following actions to address localized concerns for ORV 6 caused by infrastructure located within the bed and banks of the river:

- Remove footings and river gauge base at the former location of the Happy Isles footbridges. Re-vegetate informal trails.
- Move the Pohono Bridge gauging station north of the river outside of the ordinary high water mark. Re-vegetate informal trails.
- Remove 34 units at Housekeeping Camp that are located within the ordinary high water mark.
- Replace a section of paved trail in Leidig Meadow that is within the ordinary high water mark, using boardwalk or a series of box culverts.
- Remove riprap where riverbanks do not need stabilization to allow for channel migration(amount removed varies across alternatives). Replace riprap with bioengineered riverbanks that integrate native riparian vegetation where riverbank stabilization is necessary for protection of critical infrastructure.

Under all alternatives, existing facilities with localized effects to Geological/Hydrological ORV 6 (see Chapter 7) would be modified or removed to mitigate these effects. As a result, the remaining facilities would have no effect on ORV 6. Many actions designed to improve riparian conditions and address facility-related localized concerns pertaining to ORV 2 respond to the same concerns for ORV 6 (see Chapter 7). Actions with the potential to impact riparian areas are discussed under ORV 2 and not repeated here. The analysis provided for ORV 6 (below) pertains only to those actions related to infrastructure within the floodplain.

To prevent future adverse impacts, the NPS would regularly monitor the condition of Geological/Hydrological ORV 6 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale. A robust program of ecological restoration is common to all alternatives and designed to address localized concerns regarding river channelization throughout Segments 2A and 2B. All alternatives propose an array of actions to further enhance ORV 6, ranging from

removing additional revetment to removing historic bridges and facilities located within the 100-year floodplain. Any future impacts from continued visitor use in these segments will be identified and corrected under the monitoring program described in Chapter 5. The primary actions that vary across the alternatives and their implications for Geological/Hydrological ORV 6 are described in the sections that follow.

Alternative 2

Under Alternative 2 (Table 8-57), all existing campsites and associated infrastructure, including Housekeeping Camp and structures at Yosemite Lodge, would be removed from within the 100-year floodplain. All buildings and structures at Housekeeping Camp and Yosemite Lodge would be removed from the 100-year floodplain. Ahwahnee, Stoneman, and Sugar Pine Bridges would be removed. Actions to protect meadows and riparian complexes (ORV 2) would result in additional enhancement to ORV 6. The Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale.

TABLE 8-57: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 2)

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 6
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area outside of the 10-year floodplain to facilitate restoration goals. Formalize parking area with a total of 550 parking spaces.	These changes would reduce effects to riparian areas and enhance ORV 6, as use would be moved away from areas critical to hydrologic function.
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Remove housing and development out of the 100-year floodplain, re-contour topography, de-compact soils, and restore stream hydrologic function.	Employee housing within the 100-year floodplain is not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day-use area, river access point, and picnic area. River access would be directed to resilient sandy beaches.	Lodging within the 100-year floodplain is not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Yosemite Lodge and Camp 4		
Yosemite Lodge Visitor Facilities	Remove all of the lodging units (245 units). Repurpose the area outside of the 100-year floodplain for Day Lodge and Parking. Restore the 100-year floodplain.	Buildings within the 100-year floodplain (including lodging units, service buildings, and some employee housing) are not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Yosemite Lodge Concessioner Employee Housing	Remove temporary housing at Highland Court and the historic Thousands Cabins. Construct two new concessioner housing areas housing 104 employees. Construct 78 employee parking spaces.	The Thousands Cabins (within the 100-year floodplain) are not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	The historic Superintendent's house, located within the 100-year floodplain, is not currently causing adverse impacts to ORV 6. However, complete restoration of the floodplain in this area will enhance ORV 6.

Alternative 3

Under Alternative 3 (Table 8-58), all structures and buildings at both Housekeeping Camp and Yosemite Lodge would be removed from within the 100-year floodplain. Ahwahnee, Stoneman, and Sugar Pine bridges and footings would be removed. Actions to protect meadows and riparian complexes (ORV 2) would result in additional enhancement to ORV 6. The Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale.

TABLE 8-58: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV-6
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area outside of the 10-year floodplain to facilitate restoration goals. Formalize parking area with a total of 550 parking spaces.	These changes would reduce effects to riparian areas and enhance ORV 6, as use would be moved away from areas critical to hydrologic function.
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Retain housing and development within the 100 year floodplain. Establish a 50-foot setback from Indian Creek. Restore the riparian habitat and protect with fencing.	Although housing remains in the 100-year floodplain, it is not causing adverse impacts to river values. However, the setback would enhance ORV 6.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day use river access point and picnic area.	Lodging within the 100-year floodplain is not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Yosemite Lodge and Camp 4		
Yosemite Lodge Parking Area	Redevelop area west of Yosemite Lodge to provide additional 150 day-use parking spaces.	Mitigation measures would protect the floodplain from erosion during construction and run-off from the parking lot.
Yosemite Lodge Visitor Facilities	Remove 102 lodging units. Restore the 100-year floodplain.	Buildings within the 100-year floodplain are not currently causing adverse impacts to river values. However, substantial restoration of the floodplain in this area will enhance ORV 6.
Yosemite Lodge Concessioner Employee Housing	Remove temporary housing at Highland Court and the historic Thousands Cabins. Construct two new concessioner housing areas housing 104 employees. Construct 78 employee parking spaces.	The Thousands Cabins (within the 100-year floodplain) are not currently causing adverse impacts to river values. However, complete restoration of the floodplain in this area will enhance ORV 6.
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	The historic Superintendent's house, located within the 100-year floodplain, is not currently causing adverse impacts to ORV 6. However, restoration of the floodplain in this area will enhance ORV 6.

Alternative 4

Under Alternative 4 (Table 8-59), a total of 166 lodging units at Housekeeping Camp would be removed from within the 100-year floodplain. Ahwahnee and Sugar Pine bridges and footings would be removed. Impacts to hydrological processes at other bridge locations would be mitigated through the placement of large wood and brush layering. Actions to protect meadows and riparian complexes (ORV 2) would result in additional enhancement to ORV 6. The Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale.

TABLE 8-59: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 6
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate restoration goals. Formalize parking area with a total of 550 parking spaces.	These changes would reduce effects to riparian areas and enhance ORV 6, as use would be moved away from areas critical to hydrologic function.
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Retain housing and development within the 100 year floodplain. Establish a 50-foot setback from Indian Creek. Restore the riparian habitat and protect with fencing.	Although housing remains in the 100-year floodplain, it is not causing adverse impacts to river values. However, the setback would enhance ORV 6.
Housekeeping Camp Lodging	Remove 166 lodging units (seasonally inundated), 4 restrooms, and the store and office. River access would be directed to resilient sandy beaches.	These changes would reduce effects to the riparian area and enhance ORV 6.
Yosemite Lodge and Camp 4		
Yosemite Lodge Parking Area	Redevelop area west of Yosemite Lodge to provide additional 150 day-use parking spaces.	Mitigation measures would protect the floodplain from erosion during construction and run-off from the parking lot.
Yosemite Lodge Visitor Facilities	Retain all 245 lodging units.	Buildings within the 100-year floodplain are not currently causing adverse impacts to river values. ORV 6 will remain protected at a segmentwide scale.
Yosemite Lodge Concessioner Employee Housing	Remove temporary housing at Highland Court and the historic Thousands Cabins. Construct two new concessioner housing areas housing 104 employees. Construct 78 employee parking spaces.	The Thousands Cabins within the 100-year floodplain are not currently causing adverse impacts to river values. However, restoration of the floodplain in this area will enhance ORV 6.
Superintendent's House (Residence 1)	Remove and relocate to the NPS housing area.	The historic Superintendent's house, located within the 100-year floodplain, is not currently causing adverse impacts to ORV 6. However, restoration of the floodplain in this area will enhance ORV 6.

Alternative 5

Under Alternative 5 (Table 8-60), a total of 34 lodging units (17 buildings) at Housekeeping Camp would be removed from within the ordinary high water mark and 100-year floodplain. All bridges would remain for the near-term, and riparian impacts would be mitigated with strategic placement of large wood on riverbanks, and the addition of brush layering and constructed log jams to address scouring. Actions to protect meadows and riparian complexes (ORV 2) would result in additional enhancement to ORV 6. The Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale.

TABLE 8-60: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 6
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center	Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate restoration goals. Formalize parking area with a total of 750 parking spaces. Build a roundabout at the intersection of Northside Drive and Village Drive to address traffic congestion at intersection. Additionally, re-route Northside Drive south of the parking area to alleviate pedestrian/vehicle conflicts.	These changes would reduce effects to riparian areas and enhance ORV 6, as use would be moved away from areas critical to hydrologic function.
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Retain housing and development within the 100 year floodplain. Establish a 50-foot setback from Indian Creek. Restore the riparian habitat and protect with fencing.	Although housing remains in the 100-year floodplain, it is not causing adverse impacts to river values. However, the setback would enhance ORV 6.
Housekeeping Camp Lodging	Remove 34 units from within the ordinary high-water mark. River access would be directed to resilient sandy beaches.	These changes would reduce effects to the riparian area and enhance ORV 6.
Yosemite Lodge and Camp 4		
Yosemite Lodge Parking Area	Redevelop area west of Yosemite Lodge to provide additional 300 day-use parking spaces.	Mitigation measures would protect the floodplain from erosion during construction and run-off from the parking lot.
Yosemite Lodge Concessioner Employee Housing	Remove temporary housing at Highland Court and the historic Thousands Cabins. Construct two new concessioner housing areas housing 104 employees. Construct 78 employee parking spaces.	The Thousands Cabins (within the 100-year floodplain) are not currently causing adverse impacts to river values. However, restoration of the floodplain in this area will enhance ORV 6.
Superintendent's House (Residence 1)	Remove from Yosemite Valley.	The historic Superintendent's house, located within the 100-year floodplain, is not currently causing adverse impacts to ORV 6. However, restoration of the floodplain in this area will enhance ORV 6.

Alternative 6

Under Alternative 6 (Table 8-61), a total of 34 lodging units (17 buildings) at Housekeeping Camp would be removed from within the ordinary high water mark and 100-year floodplain. All bridges would remain and riparian impacts would be mitigated with strategic placement of large wood on riverbanks, and the addition of brush layering and constructed log jams to address scouring. Actions to protect meadows and riparian complexes (ORV 2) would result in additional enhancement to ORV 6. The Geological/Hydrological ORV 6 would remain free of adverse impacts and degradation on a segmentwide scale.

TABLE 8-61: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 6
Yosemite Village and Housekeeping Camp		
Yosemite Village Day-use Parking Area/Village Center Parking Area	Move the Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate restoration goals. Formalize parking area with a total of 850 parking spaces. Build two roundabouts and a pedestrian underpass to address traffic congestion at key intersections.	These changes would reduce effects to riparian areas and enhance ORV 6, as use would be moved away from areas critical to hydrologic function.

TABLE 8-61: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR GEOLOGICAL/HYDROLOGICAL ORV 6 (ALT 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 6
Ahwahnee Row and Tecoya Dorms Concessioner Employee Housing	Retain housing and development within the 100 year floodplain. Establish a 50-foot setback from Indian Creek. Restore the riparian habitat and protect with fencing.	Although housing remains in the 100-year floodplain, it is not causing adverse impacts to river values. However, the setback would enhance ORV 6.
Housekeeping Camp Lodging	Remove 34 units from within the ordinary high water mark. River access would be directed to resilient sandy beaches.	These changes would reduce effects to the riparian area and enhance ORV 6.
Yosemite Lodge and Camp 4		
Yosemite Lodge Parking Area	Redevelop area west of Yosemite Lodge to provide additional 300 day-use parking spaces.	Mitigation measures would protect the floodplain from erosion during construction and run-off from the parking lot.
Yosemite Lodge Concessioner Employee Housing	Remove temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees. Construct 78 employee parking spaces.	The Thousands Cabins (within the 100-year floodplain) are not currently causing adverse impacts to river values. However, restoration of the floodplain in this area will enhance ORV 6.
Superintendent's House (Residence 1)	Retain and rehabilitate in existing location to preserve the building's integrity. Prepare the structure to withstand periodic flooding.	The historic Superintendent's house, located within the 100-year floodplain, is not currently causing adverse impacts to ORV 6.

ORV 7 (GEOLOGICAL/HYDROLOGICAL) – BOULDER BAR IN EL PORTAL

As documented in Chapter 5, the boulder bar (extraordinarily large boulders) within Segment 4 of the Merced River is not adversely impacted or degraded. No actions are proposed in the vicinity of the boulder bar under any alternative. Because it is essentially impervious to human activities, the NPS has not set a management standard for ORV 7 and further management action is not required to protect this ORV. Natural processes will continue to shape this geologic feature and ORV 7 would remain protected under all alternatives.

ORV 8 (CULTURAL) – YOSEMITE VALLEY AMERICAN INDIAN ETHNOGRAPHIC RESOURCES

This ORV includes Yosemite Valley American Indian ethnographic resources—relatively contiguous and interrelated places that are inextricably and traditionally linked to the history, cultural identity, beliefs, and behaviors of contemporary and traditionally associated American Indian tribes and groups. As documented in Chapter 5, ethnographic resources in Yosemite Valley (Segments 2A and 2B) are not adversely impacted or degraded and current conditions meet or exceed the management standard. However, management concerns are present due to meadow fragmentation and the status of riparian habitat, both of which have been addressed above under ORV 2. Another management concern exists pertaining to the sapling to non-sapling ratio for California black oaks. All alternatives address this concern by introducing new seedlings into the affected stands and actively managing them to ensure high survival rates.

Ethnographic resources can be affected by park operations, crowding, and visitor use. Actions included in the *Final Merced River Plan/EIS* to enhance this river value include:

- Ensure continuing coordination between traditionally associated American Indian tribes, groups, and traditional practitioners (through the Park American Indian Liaison) with law enforcement, fire management, interpretation, invasive species, ecological restoration, and facilities management programs.
- Develop operational guidelines for material staging areas, parking, etc. to protect ethnographic resources.
- Provide access for traditionally associated American Indians for participation in annually scheduled traditional cultural events. In addition, tribal access for the personal conduct of ongoing traditional cultural practices would be provided through the Yosemite tribal fee waiver pass program.
- Continue to document the cultural and religious significance of historic properties (i.e., sites, objects, structures, districts, etc.) for Yosemite Valley.
- The ecological restoration actions associated with this planning effort, together with the invasive plant management program, would address impacts to some traditionally used plant populations in some locations.
- Restoration actions to protect riparian areas, meadows, and hydrological (ORV 2 and ORV 6) resources would further contribute to the protection and enhancement of the traditional-use plant communities included in ORV 8.

The *Final Merced River Plan/EIS* proposes a variety of actions to further enhance Cultural ORV 8, including continued coordination among traditionally associated American Indian tribes, groups, and traditional practitioners and the NPS; continued access for traditionally associated American Indians for participation in annually scheduled traditional cultural events; and ecological restoration actions to protect and enhance traditionally used plant populations.

Many actions designed to improve meadow and riparian conditions and address facility-related localized concerns pertaining to ORV 2 respond to the same concerns for ORV 8 (see Chapter 7). Therefore, actions with the potential to affect meadow and riparian areas (both positively and negatively) are discussed under ORV 2 and not repeated here. The summary analysis provided in Table 8-62 pertains only to those actions and/or effects that are unique to other aspects of Cultural ORV 8.

To prevent adverse impacts in the future, the NPS would regularly monitor the condition of Cultural ORV 8 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Cultural ORV 8 would remain free of adverse impacts and degradation on a segmentwide scale. All proposed new facilities would be located away from sensitive archeological and other traditional-use sites. Actions designed to manage visitor use would direct use away from sensitive cultural resources. Design details for new construction related to visitor use management would be developed in consultation with traditional practitioners to ensure that sensitive resources continue to be protected. Actions to protect and enhance floodplains, meadows, and riparian complexes in Segments 2A and 2B would result in additional enhancement of the traditionally used plant resources of Cultural ORV 8. Actions that would remove infrastructure and restore black oak woodlands would also enhance a critical component of ORV 8.

TABLE 8-62: SEGMENTS 2A AND 2B ACTIONS AND IMPLICATIONS FOR CULTURAL ORV 8 (ALTERNATIVES 2-6)

LOCATION AND LAND USE	ACTIONS INCLUDED IN ALL ALTERNATIVES	EFFECTS ON ORV 8
Peak Visitation Levels	Peak daily visitation ranges from 13,900 to 21,800 people, depending on the alternative.	Lower levels of visitation would provide for more privacy in conducting traditional cultural practices, thereby enhancing ORV 8. Under all alternatives, access would still be provided to annually scheduled traditional cultural events and for the personal conduct of traditional cultural practices. ORV 8 would remain protected on a segmentwide scale.
Yosemite Village and Housekeeping Camp		
Ahwahnee Tennis Courts	Tennis courts are located in a sensitive cultural area. They are removed under all alternatives.	Removal of the tennis courts would allow for recruitment of desirable black oaks in this area, thereby enhancing ORV 8.
Yosemite Lodge and Camp 4		
Yosemite Lodge Parking Area	Re-develop area west of Yosemite Lodge to provide up to 300 day-use parking spaces, depending on the alternative.	Mitigation measures would protect vegetation and traditionally used plants. Increased use in this area would be monitored to ensure protection of ethnographic resources. Additional parking near Wahoga would increase access to traditional uses at this location. ORV 8 would remain protected at a segmentwide scale.
Former Bridalveil Sewer Plant	The buried structure is removed under all alternatives.	Removal of abandoned infrastructure and re-vegetation with native plants will allow for recruitment of desirable black oaks in this area, thereby enhancing ORV 8.
Superintendent's House (Residence 1) and Garage	Alternatives 2-5 propose to remove these historic structures from the river corridor. Alternative 6 retains the buildings in place and rehabilitates them.	Moving this facility outside of the river corridor will allow for recruitment of desirable black oaks in this area, thereby enhancing ORV 8.

ORV 9 (CULTURAL) – YOSEMITE VALLEY ARCHEOLOGICAL DISTRICT

This ORV includes the Yosemite Valley Archeological District—a linked landscape that contains dense concentrations of resources that represent thousands of years of human settlement along this segment of the Merced River. As documented in Chapter 5, archeological resources in Yosemite Valley (Segments 2A and 2B) are not adversely impacted or degraded and current conditions meet or exceed the management standard. No management concerns are present.

A number of localized concerns pertain to heavily used formal and informal trails, as well as illegal campfires, graffiti, trampling, stock trail use, parking, and rock climbing. Further enhancement of ORV 9 would be achieved through actions common to all alternatives, including diverting foot traffic around sites, removing informal trails, and formalizing river and meadow access points, using noninvasive restoration techniques wherever possible. In addition, many of the actions related to ecological restoration in Segments 2A and 2B, such as delineating roadside parking, would also help protect archeological resources by diverting foot traffic away from known sites and toward less sensitive areas.

Site management guidelines would be developed for larger, more complex sites (such as Yosemite Village) to avoid resource loss through administrative actions (such as development, repair, and maintenance of facilities and underground utilities to support visitor use).

To prevent future adverse impacts, the NPS would regularly monitor the condition of Cultural ORV 9 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Cultural ORV 9 would remain free of adverse impacts and degradation on a segmentwide scale. The Yosemite Valley Archeological District would be enhanced through actions to address localized concerns. As noted in Chapter 7, after addressing all localized concerns, the presence of all existing and proposed facilities in this river segment would have no effect on ORV 9. All ground disturbance associated with ecological restoration actions; removal of buildings and infrastructure; re-routing of roads; and parking lot, campground, and employee housing construction would be subject to park standard operating procedures, subject matter expert review, and monitoring (as needed) to ensure that archeological resources are protected.

ORV 10 (CULTURAL) – YOSEMITE VALLEY HISTORIC RESOURCES

This ORV includes the Yosemite Valley Historic District—a linked landscape of river-related or river-dependent, rare, unique or exemplary buildings and structures that bear witness to the historical significance of the river system. Also included are the National Historic Landmarks (NHLs): the Ahwahnee Hotel, Ranger's Club, and LeConte Memorial Lodge. The Yosemite Valley Historic Resources ORV is a continually evolving natural and cultural system that has changed in response to successive American Indian, private, state and federal government management strategies; incremental loss of historic features; evolving land uses; and natural processes like floods, fires, and rock fall.

As documented in Chapter 5, the Yosemite Valley Historic Resource ORV (Segments 2A and 2B) is not adversely impacted or degraded; current conditions meet or exceed the management standard. Management concerns are present regarding the "serious" condition of the Ahwahnee Gatehouse (a contributing resource to the Ahwahnee Hotel National Historic Landmark) and the percentage of historic assets that are in "good" or "fair" condition. Further preservation and/or rehabilitation actions will sufficiently eliminate the management concerns, with the contributing resources of the three NHLs being highest priority.

An active program of maintenance of historic buildings and structures would continue under all alternatives, thereby enhancing ORV 10. The physical condition of historic buildings, structures, and sites would determine priorities for corrective maintenance and the schedule for routine maintenance. New development or re-development in Yosemite Valley would be designed to be compatible with the historic districts and the preservation of rustic architecture, using *"A Sense of Place: Design Guidelines for Yosemite Valley."* Actions directed toward ecological restoration and improving natural scenery in Segments 2A and 2B would enhance the historic setting of the properties included in ORV 10.

Conclusion: Under all action alternatives, Cultural ORV 10 would remain free of adverse impacts and degradation on a segmentwide scale. Cultural ORV 10 would be enhanced by regularly updating facility condition assessments, developing a list of priority actions (focusing in particular on assets in "poor" or "serious" condition), actively maintaining historic buildings and structures, and periodically updating professional documentation of historic resources. As with any natural and cultural system, change is inherent in the Yosemite Valley landscape. Not only is change tolerated, but it is must be embraced for the system to remain vibrant. In keeping with this premise, all action alternatives propose the removal of some individual historic structures and improvements to others. Despite these changes, the significance of the Yosemite

Valley Historic District would remain intact because the themes of outdoor recreation, tourism, conservation, and the preservation of scenic places through development as public parks would still be conveyed.

ORV 11 (CULTURAL) – THE EL PORTAL ARCHEOLOGICAL DISTRICT

This ORV includes the El Portal Archeological District—dense concentrations of resources that represent thousands of years of occupation and evidence of continuous, far-reaching traffic and trade. Segment 4 includes some of the oldest deposits in the region and the archeological remains of the Johnny Wilson Ranch, a regionally rare historic-era American Indian Homestead.

As documented in Chapter 5, the Archeological District in El Portal (Segment 4) is not adversely impacted or degraded and current conditions meet or exceed the management standard. No management concerns are present.

Localized concerns pertain to the abandoned infrastructure remaining in the vicinity of a site with extremely sensitive cultural materials that are highly valued by traditionally associated American Indians. Further enhancement of ORV 11 would be achieved through the following actions that are common to all alternatives:

- In recognition of the high cultural significance of CA-MRP-181, this site will be protected from any further development. A plan of action for addressing the abandoned infrastructure on the site will be developed in consultation with traditionally associated American Indian tribes and groups. Any solution(s) developed will also include a recommended approach for deterring visitor use within the site.
- Remove informal trails, non-essential roads, and abandoned infrastructure to address the archeological site disturbances at CA-MRP-0250/H and CA-MRP-0251/H.

Conclusion: Under all action alternatives, Cultural ORV 11 would remain free of adverse impacts and degradation on a segmentwide scale. Under all alternatives, existing facilities with localized effects to Cultural ORV 11 (described in Chapter 7) would be modified or removed to mitigate these effects. As a result, the remaining facilities would have no effect on the archeological resources in Segment 4. All ground disturbances associated with ecological restoration actions, removal of buildings and infrastructure, and parking lot and employee housing construction would be subject to park standard operating procedures, subject matter expert review, and monitoring (as needed) to ensure that archeological resources are protected. Restoration actions to establish a recruitment area for valley oaks in Segment 4 would further protect adjacent archeological resources.

ORV 12 (CULTURAL) – REGIONALLY RARE ARCHEOLOGICAL FEATURES

As documented in Chapter 5, this ORV, represented by the archeological sites with rock ring features in Segment 5, is not adversely impacted or degraded and current conditions meet or exceed the management standard. A management concern exists regarding human impacts to one site. All alternatives address this concern with additional monitoring and, potentially, area closures if the situation persists. The only other action proposed in Segment 5 is to allow limited private boating at a level consistent with existing wilderness zone capacities. Thus, the collective impact to ORV 12 from all actions proposed in the *Final Merced River Plan/EIS* is positive and the ORV would be protected at a segmentwide scale under all alternatives.

ORV 13 (CULTURAL) – WAWONA ARCHEOLOGICAL DISTRICT

This ORV includes the Wawona Archeological District—numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. The district spans Segments 5, 6, 7, and 8. Accordingly, the condition of ORV 13 is assessed at the property level, rather than the segmentwide scale. Segment 7 includes the remains of the U.S. Army Cavalry Camp A. E. Wood, documenting the unique Yosemite legacy of the African-American buffalo soldiers and the strategic placement of their camp near the Merced River. The Wawona Archeological District is subject to site-specific impacts from park operations, visitor use, artifact collection, vandalism, and ecological processes.

As documented in Chapter 5, the Wawona Archeological District is not currently adversely impacted or degraded. A management concern exists with regard to the number of sites with high data potential that have experienced serious human impacts. This concern will be addressed by increasing monitoring and protection of the affected sites.

The following actions would address other localized concerns and further enhance ORV 13:

- At the district-wide level, revise the existing National Register nomination to reflect changes since its original writing, for example, incorporating newly discovered resources and documenting impacts.
- Remove seven campsites from the Wawona Campground that cause potential impacts to archeological site CA-MRP-168/329/H (Camp A.E. Wood).
- Remove informal trails and fire rings adjacent to shoulder and off-road parking in proximity to site CA-MRP-0171/172/254/516/H to prevent continuing disturbance.
- Develop site management guidelines as needed for sites with complex uses. Remove shoulder and off-road parking. Limit facility and concessionaire off-road vehicle travel/parking on hotel grounds.
- Consider need for archeological site treatment measures to address impacts to shallow deposits of artifacts and features.

Finally, the NPS would locate trails, roads, and other infrastructure to avoid sensitive cultural and ethnographic resource areas and conduct public outreach and education to reduce disturbance to sensitive features. To prevent future adverse impacts, the NPS would regularly monitor the condition of Cultural ORV 13 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives.

Conclusion: Under all action alternatives, Cultural ORV 13 would remain free of adverse impacts and degradation on a segmentwide scale. Impacts to archeological resources from visitor use would be addressed through the enhancement actions described above. All ground disturbance associated with ecological restoration actions, removal of buildings and infrastructure, re-routing of roads, and parking lot and campground construction would be subject to park standard operating procedures, subject matter expert review, and monitoring (as needed) to ensure that archeological resources are protected. After addressing all localized concerns, the presence of all existing and proposed facilities in this river segment would have no effect on ORV 13 (noted in Chapter 7). All of the actions proposed in the *Final Merced River Plan/EIS* that could affect Cultural ORV 13 are common to all alternatives and described in more detail in Table 8-63.

TABLE 8-63: SEGMENT 7 ACTIONS AND THEIR IMPLICATIONS FOR CULTURAL ORV 13 (ALTERNATIVES 2-6)

LOCATION AND LAND USE	ACTIONS COMMON TO ALL ALTERNATIVES	EFFECTS ON ORV 13
Wawona		
Wawona Campground Septic System	Remove septic system, and connect to the sewer system. Build a lift station above the campground to connect to the existing water treatment plant.	Facility design, follow-on compliance, resource inventory, and mitigation measures would avoid and/or mitigate adverse impacts to sensitive archeological resources. The Wawona Archeological District would continue to be protected at a segmentwide scale.
Wawona RV Dump site	Move the dump site to an appropriate location away from the river.	
Wawona Store	Replace the existing public restroom facilities with larger restrooms to accommodate visitor use levels. Improve picnic area; redesign bus stop.	
Wawona Swinging Bridge	Provide access to Swinging Bridge from the south side of the river; delineate trail, restrooms, waste disposal and parking.	
Wawona Maintenance Yard: Operations	Construct a building and grounds facility, a wildland fire facility, and a roads facility. Remove CCC-era structures to facilitate ecological restoration objectives.	

ORV 14 (CULTURAL) – WAWONA HISTORIC RESOURCES

The Wawona Historic Resources ORV (Segment 7) includes one of the few covered bridges in the region and the National Historic Landmark Wawona Hotel complex. The Wawona Hotel complex is the largest existing Victorian hotel complex within the boundaries of a national park and one of the few remaining in the United States with a high level integrity. The Wawona Covered Bridge is in good condition, and there are no current management concerns requiring protective actions associated with it.

The Wawona Hotel complex continues to serve its original purpose as a guest lodging facility. The Facilities Management Software System (FMSS) database (used to determine thresholds for management concern, adverse impact, and degradation) has not been updated for these concession-managed resources. However, recent condition assessment of the Wawona Hotel Complex, concluded that it continues to retain a high degree of historical integrity. Individual buildings within the complex were assessed to be in good condition, with minor deterioration of historic fabric. It appears that no management concern is present; this finding will be reviewed after FMSS is updated for ORV 14.

To prevent future adverse impacts, the NPS would regularly monitor the condition of Cultural ORV 14 and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives. The NPS will continue general maintenance for the Wawona Hotel complex involving regular and routine preservation maintenance, periodic rehabilitation, and ongoing operations that serve its continuing function as a historic lodging facility.

Conclusion: Under all action alternatives, Cultural ORV 14 would remain free of adverse impacts and degradation on a segmentwide scale. Although Alternatives 2 and 3 propose removing the golf course, golf shop, and tennis court in the proximity of Wawona Hotel, these are not contributing resources to this National Historic Landmark. All other alternatives retain these facilities.

ORV 15 (SCENIC) – WILDERNESS VIEWS

As documented in Chapter 5, the scenic wilderness views in Segment 1 are not currently adversely impacted or degraded. A management standard has not been defined for this ORV because further development is strictly limited under the Wilderness Act, the associated Minimum Requirements Analysis (MRA) process, and restrictions on development at the Merced Lake High Sierra Camp. Therefore, management actions to protect this ORV are not required at this time. As discussed in Chapter 9 (Impact Topic: Scenic Resources), all of the action alternatives would result in local, long-term, minor (to moderate) beneficial impacts on scenic resources in Segment 1. Thus, the collective impact to ORV 15 from all actions proposed in the *Final Merced River Plan/EIS* is positive, and the ORV will be protected at a segmentwide scale under all alternatives.

ORV 16 (SCENIC) – ICONIC VIEWS IN YOSEMITE VALLEY

This ORV includes iconic views of Half Dome, Yosemite Falls, El Capitan, Bridalveil Fall, Three Brothers, Cathedral Rocks and Spires, Sentinel Rock, Glacier Point, North Dome, Washington Column, and Royal Arches. Meandering through a sequence of compound oxbows, wetlands, and meadows, the river and its related features provide broadened panoramas. Scenery was a key reason for setting Yosemite Valley aside as a national park, and the numerous roads, buildings and other manmade features in the Valley were developed with scenic resources in mind. As a result, views from the river corridor, including from roadside locations, trails, and vista points, continue to retain high aesthetic value.

As documented in Chapter 5, iconic views in Yosemite Valley (Segments 2A and 2B) are not adversely impacted or degraded and current conditions meet or exceed the management standard. A management concern exists for Segment 2B, which has a higher average contrast rating than is desired for segments with a scenic classification. This is primarily due to parking lots and highway markings on the road paralleling the river. To address this concern, the NPS will review the contrast analysis performed for this segment and identify actions that would remove visual contrasts to the extent possible, while still adhering to highway safety requirements.

Localized concerns include vegetation growth that has intruded on the scenic viewpoints historically available to park visitors, and riverbank erosion and informal trails in the foreground of other scenic views in the corridor. To address these concerns, the NPS will take the following actions under all alternatives:

- The NPS will adopt the maintenance program for the scenic vista points outlined in Appendix H. Because vegetation growth can obscure these iconic views, the NPS will regularly (every five years) clear vegetation that is crowding or obscuring the scenic vistas. Appendix H provides specifics on how the vegetation is to be cleared at each of the 46 viewpoints.
- Upon full analysis of the 2013 inventory and contrast analysis of existing structures, the NPS will mitigate, to the extent feasible, high contrasts found at existing sites in the recreational segment and both moderate and high contrasts found at existing sites in the scenic segment.
- All alternatives propose a 150-foot riparian buffer, which would generally insulate the river from development and protect views from its bed and banks. Restoration efforts common to Alternatives 2-6 and the riparian buffer would provide for the protection and enhancement of scenic quality in the immediate foreground.

To prevent future adverse impacts, the NPS would perform a contrast analysis when new structures are planned for construction or exterior modifications are proposed for existing structures (outlined in Chapter

5). Work of this nature will then be designed to preserve or improve existing segmentwide contrast ratings. Additionally, new development or re-development in Yosemite Valley would be designed using *A Sense of Place: Design Guidelines for Yosemite Valley*. These guidelines are intended to promote harmony between the built and natural environments.

Conclusion: All alternatives would enhance scenic quality with site-specific restoration actions and would proactively address the visual impact of future development. As a result, Scenic ORV 16 would remain free of adverse impacts and degradation at a segmentwide scale under all action alternatives.

ORV 17 (SCENIC) – VIEWS ALONG THE MERCED RIVER GORGE

As described in Chapter 5, the scenic views along the Merced River Gorge (Segment 3) are not currently adversely impacted or degraded. A management concern exists regarding the visual contrast created by the linear road feature and pavement markings. To address this concern, the NPS will review the contrast analysis performed for this segment and identify actions that would remove visual contrasts to the extent possible, while still adhering to highway safety requirements. No new development or landscape changes are proposed for this segment under any alternative, aside from minor improvements to existing roadside pullouts. Moreover, all alternatives propose to enhance ORV 17 by selectively thinning conifers to enhance views of Cascade Falls. As discussed in Chapter 9 (Impact Topic: Scenic Resources), no impacts to the scenic resource in Segment 3 have been identified from the actions proposed in any alternative. Thus, collectively, the actions proposed in the *Final Merced River Plan/EIS* will have a slight positive effect on ORV 17 (from vegetation clearing at the scenic viewpoint), and the ORV will be protected at a segmentwide scale under all alternatives.

ORV 18 (SCENIC) – WILDERNESS VIEWS ALONG THE SOUTH FORK MERCED RIVER

As documented in Chapter 5, the scenic wilderness views in Segment 5 are not currently adversely impacted or degraded. A management standard has not been defined for this ORV because further development is strictly limited under the Wilderness Act and the associated Minimum Requirements Analysis (MRA) process. Therefore, management actions to protect this ORV are not required at this time. Additionally, the only actions proposed under any alternative for this segment pertain to allowing limited private boating and monitoring impacts to archeological sites; neither of which will impact scenic views. Thus, collectively, the actions proposed in the *Final Merced River Plan/EIS* will have no effect on ORV 18, and the ORV will be protected on a segmentwide scale under all alternatives.

ORV 19 (RECREATIONAL) – WILDERNESS RECREATION ABOVE NEVADA FALL

As documented in Chapter 5, wilderness recreation above Nevada Fall (Segment 1) is not adversely impacted or degraded, and current conditions meet or exceed the management standard. A management concern exists for the trail section from Echo Valley to Lewis Creek where the trail section standard for encounter rates has been exceeded. Therefore, the NPS will conduct direct observations on this trail segment to collect additional data to verify the accuracy of indirect counts from 2012 and 2013. The

following sections provide more detail on the alternatives and the collective effect of all proposed actions on Recreational ORV 19.

Alternative 2

Alternative 2 (Table 8-64) would remove the Merced Lake High Sierra Camp and remove permanent infrastructure, converting the area to designated Wilderness. The capacity of the Little Yosemite Valley Wilderness Zone would be reduced to 25 people and the footprint of the camping area would be reduced accordingly. Designated camping areas at Moraine Dome and the Merced Lake Backpackers Camping Area would be converted to dispersed camping. This would give backpackers an opportunity to camp outside of the sound and sight of others. Actions in Alternative 2 would apply additional seasonal and weekend restrictions for commercial groups in the Mount Lyell, Merced Lake, and Little Yosemite Valley wilderness zones. These changes would reduce use levels and increase opportunities for solitude in this wild segment.

Facilities that would remain in this segment of the river include the Merced Lake Ranger Station and the Little Yosemite Valley trail crew and ranger camp. As documented in Chapters 5 and 7, no adverse impacts to ORV 19 are being caused by the existence of this infrastructure.

The NPS would monitor visitor encounter rates to ensure that they are not exceeding the management standard. Should specific thresholds be reached, management action would be taken to reduce encounter rates on the affected trail segments to an acceptable level. These thresholds were selected to inform managers of the need for action well in advance of adverse impact or degradation to ORV 19.

Conclusion: Under Alternative 2, Recreational ORV 19 would remain free of adverse impacts and degradation on a segmentwide scale. Some actions would reduce the opportunity for visitors to stay overnight in lodging in a wilderness setting. However, conversion of backpacking camping areas to dispersed camping, reductions in the wilderness zone capacity for Little Yosemite Valley, and removal of the Merced Lake High Sierra Camp would enhance this river value by increasing opportunities for solitude.

TABLE 8-64: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 2)

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 19
Merced Lake High Sierra Camp	Remove the Merced Lake High Sierra Camp; remove permanent infrastructure; convert the area to designated Wilderness.	The undeveloped and primitive elements of wilderness character would be enhanced in the immediate vicinity of the camp.
Little Yosemite Valley, Moraine Dome, and Merced Lake Backpackers Camping Areas	Convert designated camping areas to dispersed camping.	The solitude and primitive elements of wilderness character would be enhanced due to the opportunity to camp out of sight and sound of others.
Segmentwide River Access	Swimming and water play allowed (except in places closed to swimming as per the superintendent's compendium). No permits required for private boating. No commercial boating.	Permitted use and commercial limits would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Visitor Use Management Action		
Private boating	Boating would consist of short floats using pack raft or other craft that can easily be carried. Private use would be subject to wilderness permit regulations.	Permitted use would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 19
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range wilderness zones would remain the same across all the alternatives. Little Yosemite Valley (LYV) zone capacity would be reduced to 25 people.	Wilderness zone capacities are designed to protect recreational setting attributes and recreational experience quality. Reduced capacity in LYV would enhance the solitude and primitive elements of wilderness character within the zone.

Alternative 3

Alternative 3 (Table 8-65) would convert the Merced Lake High Sierra Camp to a temporary pack camp with a maximum of 15 people per night and remove permanent infrastructure, converting the area to designated Wilderness. The capacity of the Little Yosemite Valley Wilderness Zone would be reduced to 75 people and the footprint of the camping area would be reduced accordingly. Designated camping areas at Moraine Dome and the Merced Lake Backpackers Camping Area would be converted to dispersed camping. This would give backpackers an opportunity to camp away from the sight and sound of others at this location. Actions in Alternative 3 would apply additional seasonal and weekend restrictions for commercial groups in the Mount Lyell, Merced Lake, and Little Yosemite Valley wilderness zones. These changes would reduce use levels, and increase opportunities for solitude in this wild segment.

Facilities that would remain in this segment of the river include the Merced Lake Ranger Station and the Little Yosemite Valley trail crew and ranger camp. As documented in Chapters 5 and 7, no adverse impacts to ORV 19 are being caused by the existence of this infrastructure.

The NPS would monitor visitor encounter rates to ensure that they are not exceeding the management standard. Should specific thresholds be reached, management action would be taken to reduce encounter rates to an acceptable level on the affected trail sections. These thresholds were selected to inform managers of the need for action well in advance of adverse impact or degradation to ORV 19.

Conclusion: Under Alternative 3, Recreational ORV 19 would remain free of adverse impacts and degradation on a segmentwide scale. Some actions would reduce the opportunity for visitors to stay overnight in lodging in a wilderness setting. However, conversion of backpackers camping areas to dispersed camping, reductions in the wilderness zone capacity for Little Yosemite Valley, and conversion of the Merced Lake High Sierra Camp to a smaller, temporary pack camp would enhance this river value by increasing opportunities for solitude.

TABLE 8-65: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 19
Merced Lake High Sierra Camp	Convert to temporary pack camp, maximum of 15 people per night. Remove permanent infrastructure, converting the area to designated Wilderness.	The undeveloped and primitive elements of wilderness character would be enhanced by camp reduction.
Little Yosemite Valley, Moraine Dome, and Merced Lake Backpackers Camping Areas	Convert designated camping areas to dispersed camping.	The solitude and primitive elements of wilderness character would be enhanced due to the opportunity to camp out of sight and sound of other campers.
Segmentwide River Access	Swimming and water play allowed (except in places closed to swimming as per the superintendent's compendium). No permits required for private boating. No commercial boating.	Permitted use and commercial limits would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.

TABLE 8-65: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 19
Visitor Use Management Action		
Private boating	Boating would consist of short floats using craft that can easily be carried. All boaters would be subject to wilderness permit regulations.	Permitted use would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range zones would remain the same across all the alternatives. Manage to a reduced capacity of 75 people in the Little Yosemite Valley (LYV) Wilderness Zone.	Wilderness zone capacities are designed to protect recreational setting attributes and recreational experience quality. Reduced capacity in LYV would enhance the solitude and primitive elements of wilderness character within the zone.

Alternative 4

Alternative 4 (Table 8-66) would remove all facilities at the Merced Lake High Sierra Camp and ecologically restore the area. The capacity of the Little Yosemite Valley Wilderness Zone would be reduced to 100 people, and the footprint of the camping area would be reduced accordingly. Actions in Alternative 4 would apply additional seasonal and weekend restrictions for commercial groups in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones. These changes would reduce use levels and increase opportunities for solitude in this wild segment.

Facilities that would remain in this segment of the river include the Merced Lake Ranger Station and the Little Yosemite Valley trail crew and ranger camp. As documented in Chapters 5 and 7, no adverse impacts to ORV 19 are caused by the existence of this infrastructure.

The NPS would monitor visitor encounter rates to ensure that they are not exceeding the management standard. Should specific thresholds be reached, management action would be taken to reduce encounter rates to an acceptable level on the affected trail sections. These thresholds were selected to inform managers of the need for action well in advance of adverse impact or degradation to ORV 19.

Conclusion: Under Alternative 4, Recreational ORV 19 would remain free of adverse impacts and degradation on a segmentwide scale. Some actions would reduce the opportunity for visitors to stay overnight in lodging in a wilderness setting. However, conversion of backpacking camping areas to dispersed camping, reductions in the wilderness zone capacity for Little Yosemite Valley, and removal of the Merced Lake High Sierra Camp would enhance this river value by increasing opportunities for solitude.

TABLE 8-66: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 19
Merced Lake High Sierra Camp	Remove all facilities at the High Sierra Camp and ecologically restore the area.	The undeveloped and primitive elements of wilderness character would be enhanced in immediate vicinity of the camp.
Segmentwide River Access	Swimming and water play allowed (except in places closed to swimming as per the superintendent's compendium). Permits required for private boating.	Permitted use and commercial limits would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.

TABLE 8-66: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 19
Visitor Use Management Action		
Private boating	Boating would consist of short floats using craft that can easily be carried. Put-ins and take-outs would be undesignated and dispersed. Private use limited to 10 boats per day with backcountry permit on Segment 1. Permit would be required.	Permitted use would not substantively change current recreational use or recreational values in the segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Wilderness zone capacity	Zone capacities for Merced Lake, Washburn Lake, Mount Lyell, and Clark Range zones would remain the same across all the alternatives. Manage to a reduced capacity of 100 people in the Little Yosemite Valley (LYV) Wilderness Zone.	Zone capacities are designed to protect recreational setting attributes and recreational experience quality. Reduced capacity in LYV would enhance the solitude and primitive elements of wilderness character within the zone.

Alternative 5

Alternative 5 (Table 8-67) would reduce the size of the High Sierra Camp by 18 beds and apply additional seasonal and weekend restrictions for commercial groups in the Mount Lyell, Merced Lake, and Little Yosemite Valley zones. At the High Sierra Camp, a limit of 7.5 packstock strings per week would be imposed for camp operations (for an average of 30 strings per month). These changes would reduce encounter rates near the High Sierra Camp and increase opportunities for solitude in this wild segment, thereby enhancing Recreational ORV 19. The capacity of the Little Yosemite Valley Wilderness Zone would remain at 150 people.

Facilities that would remain in this segment of the river include the Merced Lake High Sierra Camp; designated camping areas in Little Yosemite Valley, Moraine Dome, and Merced Lake; the Merced Lake Ranger Station; and the Little Yosemite Valley trail crew and ranger camp. As documented in Chapters 5 and 7, no adverse impacts to ORV 19 are caused by the existence of this infrastructure.

The NPS would monitor visitor encounter rates to ensure that they are not exceeding the management standard. Should specific thresholds be reached, management action would be taken to reduce encounter rates to an acceptable level on the affected trail sections. These thresholds were selected to inform managers of the need for action well in advance of adverse impact or degradation to ORV 19.

Conclusion: Under Alternative 5, Recreational ORV 19 would remain free of adverse impacts and degradation on a segmentwide scale. The proposed actions would not substantively change existing wilderness character or wilderness experience in this segment.

TABLE 8-67: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 19
Merced Lake High Sierra Camp	Reduce capacity of Merced Lake High Sierra Camp to 11 units (42 beds). Replace the flush toilets with composting toilet. Establish a limit of 7.5 packstock strings-per-week (for an average of 30 strings-per-month) for resupply each season.	The actions would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.

TABLE 8-67: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 19
Private boating	Swimming and water play allowed (except in places closed to swimming as per the superintendent's compendium). Boating would consist of short floats using craft that can easily be carried. Put-ins and take-outs would be dispersed. Permits required for private boating. No commercial boating. Private use limited to 20 people per day with backcountry permit on Segment 1.	Permitted use would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Wilderness zone capacity	All zone capacities within Segment 1 remain the same as current conditions.	The actions would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.

Alternative 6

Alternative 6 (Table 8-68) would retain the Merced Lake High Sierra Camp at current levels. The capacity of the Little Yosemite Valley Wilderness Zone would remain at 150 people. Additional seasonal and weekend restrictions for commercial groups in the Mount Lyell, Merced Lake, and Little Yosemite Valley wilderness zones would be applied. These changes would not have a substantial impact on current use levels in Segment 1.

Facilities that would remain in this segment of the river include the Merced Lake High Sierra Camp; designated camping areas in Little Yosemite Valley, Moraine Dome, and Merced Lake; the Merced Lake Ranger Station; and the Little Yosemite Valley trail crew and ranger camp. As documented in Chapters 5 and 7, no adverse impacts to ORV 19 are caused by the existence of this infrastructure.

The NPS would monitor visitor encounter rates to ensure that they are not exceeding the management standard. Should specific thresholds be reached, management action would be taken to reduce encounter rates to an acceptable level on the affected trail sections. These thresholds were selected to inform managers of the need for action well in advance of adverse impact or degradation to ORV 19.

Conclusion: Under Alternative 6, the Recreational ORV in Segment 1 of the Merced River corridor would remain free of adverse impacts and degradation on a segmentwide scale. The actions proposed would not substantively change existing wilderness character or wilderness experience in Segment 1.

TABLE 8-68: SEGMENT 1 ACTIONS AND IMPLICATIONS FOR RECREATIONAL ORV 19 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 19
Location		
Merced Lake High Sierra Camp	Replace the flush toilets with composting toilet.	The actions would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Segmentwide River Access	Swimming and water play allowed (except in places closed to swimming as per the superintendent's compendium). Permits required for private boating. No commercial boating.	Permitted use would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.

Visitor Use Management Action		
Private boating	Boating would consist of short floats using craft that can easily be carried. Put-ins and take-outs would be dispersed. Private use limited to 10 boats per day with backcountry permit on Segment 1. Permit would be required.	Permitted use would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.
Wilderness zone capacity	All zone capacities within Segment 1 remain the same as current conditions.	The actions would not substantively change wilderness character or wilderness experience in this segment. Recreational ORV 19 would remain protected on a segmentwide scale.

ORV 20 (RECREATIONAL) – RIVER-RELATED RECREATION IN YOSEMITE VALLEY

This ORV includes a wide variety of river-related recreational activities in the Valley's extraordinary setting along the Merced River. As the river meanders through Yosemite Valley, visitors are able to immerse themselves in their surroundings, taking in the sights, sounds, and feel of the water's flow and its dramatic backdrop. These experiences, in turn, relieve stress and promote connection to the natural world.

As documented in Chapter 5, river-related recreation in Yosemite Valley (Segments 2A and 2B) is not adversely impacted or degraded and current conditions meet or exceed the management standard. A management concern exists for the Bridalveil Fall viewing platform, as the number of people on the platform exceeds the displacement level for this site during peak periods of use. In response, the *Final Merced River Plan/EIS* includes a commitment to redesign access and parking at this location in order to better disperse visitor use and provide less crowded conditions. This work will be completed with additional project-level design and compliance.

To prevent future adverse impacts to Recreational ORV 20, the NPS would regularly monitor visitor densities at a variety of recreation sites and take management action when specific thresholds are reached (outlined in Chapter 5). This monitoring program is part of all action alternatives. The following sections provide more detail on the alternatives and the collective effect of all proposed actions on Recreational ORV 20.

Alternative 2

Under Alternative 2 (Table 8-69), the level of peak visitation accommodated in Yosemite Valley would be reduced significantly. A large reduction in lodging is also proposed and, as a result, camping would represent 45% of the total overnight accommodations within the Valley. Visitors receiving a day-use permit to access the Valley would see fewer roads, trails, buildings, and bridges and a change in the physical appearance of Yosemite Valley— a result of actions to restore these areas to a more natural appearance. The visitor experience would be shaped to feature self-reliance and a focus on nature-based activities, such as hiking, wildlife viewing, private boating, and swimming at designated beaches. Commercial and retail services would be oriented toward serving basic needs, with the assumption that most clothing, gifts, and outdoor equipment would be purchased outside of the park.

TABLE 8-69: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 2)

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 20
Peak Visitation Levels	13,900 visitors per day	Lower levels of visitation would reduce crowding and congestion for individuals gaining access to Yosemite Valley, thereby enhancing Recreational ORV 20.
User Capacity	12,570 people at one time	Significantly lower capacity would reduce crowding and congestion, thereby enhancing Recreational ORV 20.
Curry Village and Campgrounds		
Concessioner Stables	Remove the Concessioner Stables; eliminate commercial day rides.	Changes would reduce opportunities for one type of recreational activity, but would not substantially alter essential components of river-related recreation.
North, Lower and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within the 100-year floodplain; establish designated raft put-ins. Add campsites west of Backpacker's to partially offset removals.	Changes would be offset by new campsites in vicinity of Yosemite Lodge. Recreational ORV 20 would remain protected on a segmentwide scale.
Curry Village Lodging	Lodging would include 433 units (143 hard-sided units and 290 tents).	Changes to lodging would slightly increase supply of overnight accommodations at Curry Village. Although Curry Village itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Lower Rivers Nature Walk	Create an interpretive (nature) walk through Lower Rivers that emphasizes river-related natural processes, the park's ecological restoration work and what visitors can do to protect the river.	Change would improve interpretation of the river and its values, and would enhance Recreational ORV 20.
Yosemite Village and Housekeeping Camp		
The Ahwahnee Pool and Tennis Courts	Remove the pool and tennis courts.	Removal of facilities would reduce opportunities for these types of recreational activities, but would not substantially alter essential components of river-related recreation.
River Access	No commercial boating. Limit private use to 25 trips per day in Segment 2 between the Pines Campgrounds and Sentinel Beach.	Private rafting would continue on a slightly longer reach of the Merced River. The lack of commercial rentals would require visitors to rely on their own equipment for this activity. Reducing the number of boats allowed on the river would disperse use and enhance Recreational ORV 20.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day use area with river access and picnicking.	Changes to lodging would decrease the supply of overnight accommodations. Although Housekeeping Camp itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Bridalveil Fall Trail	Redesign parking, trails, boardwalks, and viewing at the base of the falls to improve wayfinding and pedestrian circulation. Restore informal trails. Improve ADA compliance of pedestrian walkways and restrooms.	Change would improve circulation and wayfinding, thereby enhancing Recreational ORV 20.

TABLE 8-69: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 2)

LOCATION AND LAND USE	ALTERNATIVE 2 ACTIONS	EFFECTS ON ORV 20
Yosemite Lodge and Camp 4		
Yosemite Lodge Visitor Facilities	Remove all of the lodging units (245 units). Repurpose the area outside the 100-year floodplain for Day Lodge and Parking. Restore the 100-year floodplain.	Changes to lodging would reduce the supply of overnight accommodations. Although Yosemite Lodge itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Yellow Pine, Camp 4, Yosemite Lodge, and West Valley Campgrounds	Remove camping at Yellow Pine and restore area to natural conditions. Expand Camp 4 eastward to provide 35 additional walk-in sites. Restore Yellow Pines site and restore group administrative use sites to natural conditions.	Changes would largely offset loss of campsites in other campgrounds. Recreational ORV 20 would remain protected on a segmentwide scale.
Recreational Experience Quality	Reduce amount of day-use parking, and implement an East Yosemite Valley Day-use Parking Permit system.	Parking for personal vehicles would remain provided and these changes would not substantially alter essential components of river-related recreation. Managing to the available parking supply would reduce traffic congestion, thereby enhancing Recreational ORV 20.

Conclusion: Under Alternative 2, Recreational ORV 20 would remain free of adverse impacts and degradation on a segmentwide scale. Fewer visitors during the peak summer season would reduce crowding and enhance Recreational ORV 20 for those individuals who are able to gain access to Yosemite Valley. A comprehensive set of restoration actions would enhance opportunities for people to connect with the river and its values. Some reduction in commercial services, such as rafting and bicycle rentals, would require more visitors to use personal equipment. However, lack of these facilities would not affect Recreational ORV 20 on a segmentwide scale.

Alternative 3

Under Alternative 3 (Table 8-70), the level of peak visitation accommodated in Yosemite Valley would be reduced significantly. A large reduction in lodging is also proposed and, as a result, camping would represent 45% of the total number of overnight accommodations in the Valley. Visitors receiving a day-use permit to access the Valley would see fewer roads, trails, buildings and bridges and a change in the physical appearance of Yosemite Valley— a result of actions to restore these areas to a more natural appearance. The visitor experience would be shaped to feature self-reliance and a focus on nature-based activities, such as hiking, wildlife viewing, private boating, and swimming at designated beaches. Commercial and retail services would be oriented toward primarily serving basic needs, with the assumption that most clothing, gifts, and outdoor equipment would be purchased outside of the park.

TABLE 8-70: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 20
Peak Visitation Levels	13,200 visitors per day	Lower levels of visitation would reduce crowding and congestion for individuals gaining access to Yosemite Valley, thereby enhancing Recreational ORV 20.
User Capacity	12,800 people at one time	Lower capacity would reduce crowding and congestion thereby enhancing Recreational ORV 20.

TABLE 8-70: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 20
Curry Village and Campgrounds		
Concessioner Stables	Reduce the Concessioner Stables; eliminate commercial day rides.	Changes would reduce opportunities for one type of recreational activity, but would not substantially alter components of river-related recreation.
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 150 feet of the river; establish designated raft put-ins. Add campsites west of Backpacker's to partially offset removals.	Changes would be offset by new campsites at Camp 4 and Upper Pines. Recreational ORV 20 would remain protected on a segmentwide scale.
Curry Village Lodging	Lodging would include 355 units (65 hard-sided units and 290 tents).	Changes to lodging would reduce access to overnight accommodations at Curry Village. Curry Village itself is not part of this ORV but does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Lower Rivers Nature Walk	Create an interpretive (nature) walk through Lower Rivers that emphasizes river-related natural processes, the park's ecological restoration work and what visitors can do to protect the river.	Change would improve interpretation of the river and its values, and would enhance Recreational ORV 20.
Yosemite Village and Housekeeping Camp		
The Ahwahnee Pool and Tennis Courts	Remove the pool and tennis courts.	Removal of facilities would reduce opportunities for these types of recreational activities, but would not substantially alter essential components of river-related recreation.
River Access	No commercial boating allowed. Private use limited to 50 trips per day in Segment 2 between Housekeeping Camp and Cathedral Beach.	Private rafting would continue on a slightly longer reach of the Merced River. The lack of commercial rentals would require visitors to rely on their own equipment for this activity. Reducing the number of boats allowed on the river would disperse use and enhance Recreational ORV 20.
Housekeeping Camp Lodging	Remove all 266 lodging units. Convert Housekeeping Camp to a day use river access point and picnic area.	Changes to lodging would decrease the supply of overnight accommodations. Although Housekeeping Camp itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Bridalveil Fall Trail	Redesign trails, boardwalks, and viewing at the base of the falls to improve wayfinding and pedestrian circulation. Restore informal trails. Improve ADA compliance of pedestrian walkways and restrooms.	Change would improve circulation and wayfinding, thereby enhancing Recreational ORV 20.
Yosemite Lodge And Camp 4		
Yosemite Lodge Visitor Facilities	Remove 102 lodging units (143 units remain). Repurpose the area outside the 100-year floodplain for Day Lodge and Parking. Restore the 100-year floodplain.	Changes to lodging would reduce the supply of overnight accommodations. Although Yosemite Lodge itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.

TABLE 8-70: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 3)

LOCATION AND LAND USE	ALTERNATIVE 3 ACTIONS	EFFECTS ON ORV 20
Yellow Pine, Camp 4, Yosemite Lodge, and West Valley Campgrounds	Retain Yellowpine Campground. Expand Camp 4 eastward to provide 35 additional walk-in sites.	Changes would largely offset loss of campsites in other campgrounds. Recreational ORV 20 would remain protected on a segmentwide scale.
Recreational Experience Quality	Reduce available day-use parking, and implement an East Yosemite Valley Day-use Parking Permit system.	Parking for personal vehicles would remain provided and these changes would not substantially alter essential components of river-related recreation. Managing to the available parking supply would reduce traffic congestion, thereby enhancing Recreational ORV 20.

Conclusion: Under Alternative 3, Recreational ORV 20 would remain free of adverse impacts and degradation on a segmentwide scale. Fewer visitors during the peak summer season would reduce crowding and enhance Recreational ORV 20 for those individuals who are able to gain access to Yosemite Valley. A comprehensive set of restoration actions would enhance opportunities for people to connect with the river and its values. Some reduction in commercial services, such as rafting and bicycle rentals, would require more visitors to use personal equipment. However, lack of these facilities would not affect Recreational ORV 20 on a segmentwide scale.

Alternative 4

Under Alternative 4 (Table 8-71), the level of peak visitation accommodated in Yosemite Valley would be reduced. Lodging would also be reduced by removing more than half of Housekeeping Camp and replacing all lodging at Boys Town with a new campground. The Concessioner Stables would be replaced by a new campground and additional campsites would be added at a number of locations in Yosemite Valley. As a result of the significant increase in campsite inventory, camping would represent 46% of the total number of overnight accommodations in the Valley. Visitors receiving a day-use permit to access the Valley would see fewer roads, trails, buildings and bridges and a change in the physical appearance of Yosemite Valley— a result of extensive restoration of these areas to a natural appearance. The visitor experience would be shaped to feature nature-based activities, such as hiking, wildlife viewing, private boating, and swimming at designated beaches.

TABLE 8-71: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 20
Peak Visitation Levels	17,000 visitors per day	Lower levels of visitation would reduce crowding and congestion for individuals gaining access to Yosemite Valley, thereby enhancing Recreational ORV 20.
User Capacity	16,200 people at one time	Lower capacity would reduce crowding and congestion thereby enhancing Recreational ORV 20.
Curry Village and Campgrounds		
Concessioner Stables	Redevelop as a campground with 41 sites. Eliminate commercial day rides.	Changes would reduce opportunities for one type of recreational activity, but would not substantially alter essential components of river-related recreation.

TABLE 8-71: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 20
North, Lower, and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 150 feet of the river; establish designated raft put-ins. Add campsites west of Backpackers to partially offset removals.	Changes would be offset by new campsites at Camp 4 and Upper Pines. Recreational ORV 20 would remain protected on a segmentwide scale.
Curry Village Lodging	Lodging would include 355 units (65 hard-sided units and 290 tents).	Changes to lodging would reduce access to overnight accommodations at Curry Village. Although Curry Village itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Lower Rivers Nature Walk	Create an interpretive (nature) walk through Lower Rivers that emphasizes river-related natural processes, the park's ecological restoration work and what visitors can do to protect the river.	Change would improve interpretation of the river and its values, and would enhance Recreational ORV 20.
Yosemite Village and Housekeeping Camp		
The Ahwahnee Pool and Tennis Courts	Remove the pool and tennis courts.	Removal of facilities would reduce opportunities for these types of recreational activities, but would not substantially alter essential components of river-related recreation.
River Access	Boating allowed. Private use limited to 100 trips per day between Clark's Bridge and Cathedral Beach. Commercial rafting limited to 75 boats at one time between Housekeeping Camp and Sentinel Beach.	Change would limit the number of commercial boats at one time on the river. Private rafting would continue on a slightly longer reach of the Merced River. Reducing the number of boats allowed on the river would disperse use and enhance Recreational ORV 20.
Upper and Lower River Campground	Construct 32 campsites at Upper River and 40 sites at Lower River, all 150-feet from the river	Changes would increase the number of campsites available. Recreational ORV 20 would remain protected on a segmentwide scale.
Housekeeping Camp Lodging	Remove 166 units out of the ordinary high water mark and in areas of frequent inundation and restore to natural conditions.	Changes to lodging would decrease the supply of overnight accommodations. Although Housekeeping Camp itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Bridalveil Fall Trail	Redesign trails, boardwalks, and viewing at the base of the falls to improve wayfinding and pedestrian circulation. Restore informal trails. Improve ADA compliance of pedestrian walkways and restrooms.	Change would cause improve circulation and wayfinding thus enhancing ORV 20.
Yosemite Lodge and Camp 4		
Yosemite Lodge Visitor Facilities	Retain all 245 units at Yosemite Lodge.	Although Yosemite Lodge itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.

TABLE 8-71: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 4)

LOCATION AND LAND USE	ALTERNATIVE 4 ACTIONS	EFFECTS ON ORV 20
Yellow Pine, Camp 4, Yosemite Lodge, and West Valley Campgrounds	Retain Yellow Pine Campground. Expand Camp 4 eastward to provide 35 additional walk-in sites.	Changes would increase the number of campsites available. Recreational ORV 20 would remain protected on a segmentwide scale.
Recreational Experience Quality	Reduce available day-use parking, and implement an East Yosemite Valley Day-use Parking Permit system.	Parking for personal vehicles would remain provided and these changes would not substantially alter essential components of river-related recreation. Managing to the available parking supply would reduce traffic congestion, thereby enhancing Recreational ORV 20.

Conclusion: Under Alternative 4, Recreational ORV 20 would remain free of adverse impacts and degradation on a segmentwide scale. Fewer visitors during the peak summer season would reduce crowding and enhance Recreational ORV 20 for those individuals who are able to gain access to Yosemite Valley. A comprehensive set of restoration actions would enhance opportunities for people to connect with the river and its values. Some reduction in commercial services, such as bicycle rentals, swimming pools, and gift shops, would require more visitors to use personal equipment and would likely increase use at the facilities remaining. However, the reduced availability of these services would not affect Recreational ORV 20 on a segmentwide scale.

Alternative 5

Under Alternative 5 (Table 8-72), peak visitation to Yosemite Valley would be the same as observed in recent years. The availability of year-round lodging would be increased by replacing some tent cabins at Boys Town with new hard-sided cabins. New walk-in campsites would be provided at several locations in Yosemite Valley, including the site of the former Upper and Lower River Campgrounds. As a result of the increase to campsite inventory, camping would represent 37% of the total overnight accommodations within the Valley. Visitors would see fewer industrial and administrative facilities in Yosemite Village and a change in the physical appearance of Yosemite Valley, with extensive restoration of meadows and riverbanks. The visitor experience would be designed to feature a wide array of recreational activities including rafting, bicycling, ice skating, hiking, wildlife viewing, and swimming.

TABLE 8-72: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALT 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 20
Segmentwide visitation	20,100 visitors per day	This managed change in visitation would reduce crowding and congestion thereby enhancing the Recreational ORV on a segmentwide scale.
User Capacity	18,710 people at one time	This minor reduction in at one time capacity would reduce crowding and congestion thereby enhancing Recreational ORV 20 on a segment wide level.
Curry Village and Campgrounds		
Concessioner Stables	Eliminate commercial equestrian day rides.	Changes would reduce opportunities for one type of recreational activity, but would not substantially alter essential components of river-related recreation.

TABLE 8-72: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALT 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 20
North, Lower and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 100 feet of the river; establish designated raft put-ins. Add campsites west of Backpacker's to partially offset removals.	Changes would be offset by new campsites in other locations. Recreational ORV 20 would remain protected on a segmentwide scale.
Curry Village Lodging	Increase lodging to 482 units. 301 canvas tent cabins; 18 units at Stoneman House; 47 hard-sided cabin-with-bath units. In Boys Town, retain 50 historic canvas tent cabins and 14 cabin-without-bath units in their historic configuration	Changes to lodging would slightly increase supply of overnight accommodations. Although Curry Village itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Lower Rivers Nature Walk	Create an interpretive (nature) walk through Lower River that emphasizes river-related natural processes, the park's ecological restoration work and what visitors can do to protect the river.	Change would improve interpretation of the river and its values, and would enhance Recreational ORV 20.
Yosemite Village and Housekeeping Camp		
The Ahwahnee Tennis Courts	Restore the impacted portion of Ahwahnee Meadow to natural meadow conditions, while allowing special functions, such as weddings to continue on the lawn. Remove the tennis courts from the black oak woodland. Restore topography by removing abandoned irrigation lines and fill, filling in ditches, and revegetating with native meadow vegetation.	Removal of facility would reduce opportunities for one type of recreation activity, but would not alter components of the river recreation experience. Recreational ORV 20 would remain protected segmentwide.
River Access	West Yosemite Valley allows private boating for 45 people per day. East Yosemite Valley allows private boating for 45 people per day between Clark's Bridge and Sentinel Beach, plus an additional 150 private boats per day Between Stoneman Bridge and Sentinel Beach, and 100 commercial boats per day between Lower Rivers Day-use Area and Sentinel Beach.	Change would limit commercial boating and would limit the number of private boats. However, this change does not affect essential components of the Recreational ORV. This reduction in boats enhances dispersed recreation along the river corridor thereby enhancing Recreational ORV 20.
Upper and Lower River Campground	Construct 32 campsites at Upper River and 40 sites at Lower River, all 150-feet from the river	Changes would increase the number of campsites available. Recreational ORV 20 would remain protected on a segmentwide scale.
Housekeeping Camp Lodging	Remove 34 units out of ordinary high water mark. Restore one acre of the riparian ecosystem.	Changes to lodging would decrease the supply of overnight accommodations in this location. Although Housekeeping Camp itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Bridalveil Fall Trail	Redesign trails, boardwalks, and viewing at the base of the falls to improve wayfinding and pedestrian circulation. Restore informal trails. Improve ADA compliance of pedestrian walkways and restrooms.	Change would improve circulation and wayfinding, thereby enhancing Recreational ORV 20.
Yosemite Lodge and Camp 4		
Yosemite Lodge Visitor Facilities	Retain all 245 units at Yosemite Lodge.	Although Yosemite Lodge itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.

TABLE 8-72: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALT 5)

LOCATION AND LAND USE	ALTERNATIVE 5 ACTIONS	EFFECTS ON ORV 20
Yellow Pines and Camp 4 Campgrounds	Expand Camp 4 eastward to provide 35 additional walk-in sites. Retain Yellow Pine Campground	Increased access to camping as recreational experience would not substantially alter components of the river recreation experience. The ORV would remain protected segmentwide.
Recreational Experience Quality	Increase available day-use parking, and provide a remote lot for day-use parking in El Portal. Manage segment 2 capacity as outlined in Chapter 6.	Parking for personal vehicles would remain provided and these changes would not substantially alter essential components of river-related recreation. Managing to the available parking supply would reduce traffic congestion, thereby enhancing Recreational ORV 20.

Conclusion: Under Alternative 5, Recreational ORV 20 would remain free of adverse impacts and degradation on a segmentwide scale. A comprehensive set of restoration actions would enhance opportunities for people to connect with the river and its values. Raft and bicycle rentals would provide equipment on-site, likely expanding the number of visitors who would participate in these recreational activities. The NPS would manage to an established user capacity, which would ensure that a quality recreational experience is provided throughout the year. Transportation system improvements would be designed to accommodate this capacity, thereby reducing vehicle congestion and enhancing the Recreational ORV.

Alternative 6

Alternative 6 (Table 8-73) increases the level of peak visitation accommodated in Yosemite Valley. The availability of year-round lodging would increase significantly by nearly doubling the size of Yosemite Lodge and replacing all of the tent cabins at Boys Town with new hard-sided cabins. The campsite inventory would also increase substantially. Additional walk-in campsites would be provided at several locations throughout Yosemite Valley, including the site of the former Upper and Lower River Campgrounds, and at Eagle Creek in West Valley. As a result of these increases in campsite inventory, camping would represent 37% of the total overnight accommodations within the Valley. Visitors would see fewer industrial and administrative facilities in Yosemite Village and a change in the physical appearance of Yosemite Valley from extensive restoration of meadows and riverbanks. The visitor experience would be designed to feature a wide array of recreational activities including rafting, bicycling, ice skating, hiking, wildlife viewing, and swimming.

TABLE 8-73: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 20
Segmentwide visitation	21,800 visitors per day	This managed change in visitation would reduce crowding and congestion thereby enhancing the Recreational ORV on a segmentwide scale.
User capacity	19,920 people per day	This increase in at one time capacity would be managed with improvements to the transportation system. Recreational ORV 20 would remain protected on a segmentwide scale.

TABLE 8-73: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 20
Curry Village and Campgrounds		
Concessioner Stables	Eliminate commercial equestrian day rides.	Changes would reduce opportunities for one type of recreational activity, but would not substantially alter essential components of river-related recreation.
North, Lower and Upper Pines Campgrounds and Backpackers Campground	Remove all campsites within 100 feet of the river; establish designated raft put-ins. Add campsites west of Backpacker's to partially offset removals.	Changes would be offset by new campsites in other locations. Recreational ORV 20 would remain protected on a segmentwide scale.
Curry Village Lodging	Lodging would include 453 units. (290 canvas tent cabins and 163 hard-sided units).	Changes to lodging would slightly increase supply of overnight accommodations. Although Curry Village itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Lower Rivers Nature Walk	Create an interpretive (nature) walk through Lower Rivers that emphasizes river-related natural processes, the park's ecological restoration work and what visitors can do to protect the river.	Change would improve interpretation of the river and its values, and would enhance Recreational ORV 20.
Yosemite Village and Housekeeping Camp		
The Ahwahnee Tennis Courts	Restore the impacted portion of Ahwahnee Meadow to natural meadow conditions, while allowing special functions, such as weddings to continue on the lawn. Remove the tennis courts from the black oak woodland. Restore topography by removing abandoned irrigation lines and fill, filling in ditches, and vegetating with native meadow vegetation.	Removal of facility would reduce opportunities for one type of recreation activity, but would not alter components of the river recreation experience. Recreational ORV 20 would remain protected on a segmentwide scale.
River Access	Private boating limited to the area between Clark's Bridge and below Pohono Bridge for 150 people per day. Commercial use limited to 100 boats at one time between Housekeeping West Beach and Sentinel Beach.	Change would limit commercial boating and would limit the number of private boats. However, this change does not affect essential components of the Recreational ORV. This management of boats enhances dispersed recreation along the river corridor thereby enhancing the ORV segmentwide.
Upper and Lower River Campground	Construct 32 campsites at Upper River and 40 sites at Lower River, all 150-feet from the river	Changes would increase the number of campsites available. Recreational ORV 20 would remain protected on a segmentwide scale.
Housekeeping Camp Lodging	Remove 34 units out of ordinary high water mark. Restore one acre of the riparian ecosystem.	Changes to lodging would decrease the supply of overnight accommodations in this location. Although Housekeeping Camp itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Bridalveil Fall Trail	Redesign trails, boardwalks, and viewing at the base of the falls to improve wayfinding and pedestrian circulation. Restore informal trails. Improve ADA compliance of pedestrian walkways and restrooms.	Change would improve circulation and wayfinding, thereby enhancing Recreational ORV 20.

TABLE 8-73: SEGMENTS 2A AND 2B ACTIONS AND THEIR IMPLICATIONS FOR RECREATIONAL ORV 20 (ALTERNATIVE 6)

LOCATION AND LAND USE	ALTERNATIVE 6 ACTIONS	EFFECTS ON ORV 20
Yosemite Lodge And Camp 4		
Yosemite Lodge Visitor Facilities	Construct new 3 story-lodging structure(s) with the pre-flood number of 440 units (redesign Yosemite Lodge out of the 100-year floodplain).	Changes to lodging would increase the supply of overnight accommodations. Although Yosemite Lodge itself is not part of the Recreational ORV, lodging does facilitate access to all river values for certain visitors. Recreational ORV 20 would remain protected on a segmentwide scale.
Yellow Pine, Camp 4, Yosemite Lodge, and West Valley Campgrounds	Expand Camp 4 eastward to provide 35 additional walk-in sites. Retain Yellow Pine Campground	Changes would increase the number of campsites available. Recreational ORV 20 would remain protected on a segmentwide scale.
Recreational Experience Quality	Increase available day-use parking, and provide a remote lot for day-use parking in El Portal. Manage segment 2 capacity as outlined in Chapter 6.	Parking for personal vehicles would remain provided and these changes would not substantially alter essential components of river-related recreation. Managing to the available parking supply would reduce traffic congestion, thereby enhancing Recreational ORV 20.

Conclusion: Under Alternative 6, Recreational ORV 20 would remain free of adverse impacts and degradation on a segmentwide scale. A comprehensive set of restoration actions would enhance opportunities for people to connect with the river and its values. Raft and bicycle rentals would provide equipment on-site, likely expanding the number of visitors who would participate in these recreational activities. The NPS would manage to an established user capacity, which would ensure that a quality recreational experience is provided throughout the year. Significant changes to the transportation system (including an overflow parking lot in West Valley) would be made to accommodate this capacity, thereby reducing vehicle congestion and enhancing the Recreational ORV.

National Park Service
U.S. Department of the Interior

Merced Wild and Scenic River
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