Yosemite National Park

National Park Service
U.S. Department of the Interior

Merced Wild and Scenic River

Draft Comprehensive Management Plan and Environmental Impact Statement

Appendices

January 2013

Providing Access and Protecting Resources

Yosemite National Park

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APPENDIX A

ACTIONS THAT AMEND THE GENERAL MANAGEMENT PLAN

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SPECIFIC AMENDMENTS TO THE 1980 YOSEMITE GENERAL MANAGEMENT PLAN RESULTING FROM THE MERCED RIVER PLAN

The Wild and Scenic Rivers Act requires river managing agencies to prepare comprehensive management plans for each Wild and Scenic river. The Act generally provides that river management plans "shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands" (16 USC 1274).

In the case of the Merced Wild and Scenic River Comprehensive Management Plan (Merced River Plan), it will revise portions of the National Park Service's 1980 *General Management Plan* for Yosemite National Park. The Merced River Plan provides direction for the management of the 81 miles of the Merced Wild and Scenic River under the jurisdiction of the NPS. No development or park use of lands in the river corridor shall be permitted that is inconsistent with the Wild and Scenic Rivers Act designation of the Merced River, with this plan, or with the *General Management Plan*.

Alternative 5 is identified as the Preferred Alternative. If this alternative is ultimately selected for implementation, it would result in the following revisions and amendments to the General Management Plan.

- The Merced River Plan's river corridor boundaries, segment classifications, ORVs and corresponding management objectives revise the *General Management Plan* by establishing more detailed land-use prescriptions that must be applied in future site-specific planning.

- The Merced River Plan's Section 7 determination process (as called for in the Wild and Scenic Rivers Act) is a tool that augments the goals of the *General Management Plan* by establishing specific guidelines for determining appropriate actions within the bed and banks of the Merced River that do not constitute a direct and adverse effect on the river's free-flowing condition, water quality, or other values.

- The Merced River Plan's specific programs, including user capacity, ecological restoration, and ongoing monitoring revise and augment the previous broad direction provided in the *General Management Plan*.

- The management actions and site planning presented in Alternative 5 for Yosemite Valley, El Portal, and Wawona would revise previous site planning actions proposed in the *General Management Plan*.

Please refer to Table A-2 for a complete list amendments to specific actions of the *General Management Plan* that would result from the Merced River Plan.

MANAGEMENT GOALS

The *General Management Plan* establishes five broad goals for managing Yosemite National Park (NPS 1980: 1-4):

- Reclaim priceless natural beauty
- Allow natural processes to prevail
- Promote visitor understanding and enjoyment
- Markedly reduce traffic congestion
- Reduce crowding

The Wild and Scenic Rivers Act requires comprehensive planning of designated rivers to provide for the protection of the river's free-flowing character and the values that make it worthy of designation. It directs that 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."

While the focus of this river management plan is on the Merced River as a unit of the national wild and scenic rivers system, the plan also provides long-term, comprehensive guidance for protecting the values of the Merced River that support its inclusion in the national park system and the national wilderness preservation.

The Merced River Plan was developed to be in keeping with the five broad goals of the *General Management Plan, however its overarching goals are to be in keeping with the mandates of the Wild and Scenic Rivers Act.* Namely, these are to preserve designated rivers in their free- flowing condition and to protect and enhance the river's ORVs. The goals of the *General Management Plan* and those of the Merced River Plan are intertwined; no one goal can be emphasized to the complete exclusion of the others.

PURPOSE OF THE WILD AND SCENIC RIVER

The *General Management Plan* sets forth the purposes of the park and the important resources and values that guide resource management, visitor use, and park operations (NPS 1980: 5-10). The Merced River Plan establishes what the Wild and Scenic Rivers Act calls, "outstandingly remarkable values" for the river. These are the unique, rare, and exemplary characteristics of the river that make it stand apart from all other rivers in the nation. These ORVs, along with water quality and the river's free-flowing condition, are central to the overarching purpose of wild and scenic river management: to protect and enhance these values while allowing public enjoyment, education, and recreation now and in the future.

The Merced River Plan augments the park's *General Management Plan* by further articulating these important river-related values for the Merced Wild and Scenic River.

MANAGEMENT OBJECTIVES

The *General Management Plan* sets forth a number of Management Objectives that guide resource management, visitor use, and park operations (NPS 1980: 5-10). The Merced River Plan amends the *General Management Plan* by providing additional detailed guidance to park managers on how to achieve management objectives for the Merced River corridor.

The Merced River Plans' management elements include boundaries, classifications, ORVs, Section 7 determination process, a user capacity program, an ecological restoration program, an ongoing monitoring program, management actions needed to protect and enhance river values, and actions to address facilities and land use. Taken together, these elements further guide resource management, visitor use, and park operations within the Merced River corridor.

Projects within the river corridor must protect and enhance ORVs and be consistent with the other elements of the Merced River Plan. There may be occasions when two or more river values may be in conflict with one another. For example, the protection and enhancement of free-flowing condition may not be compatible with the protection of historic structures identified as ORVs that are located in the bed and banks of the river. When conflicts such as these arise, the managing agency must determine appropriate trade-offs to best mange the river system as a whole. Projects adjacent to the river corridor must protect ORVs, and depending on location, may need to undergo a Section 7 review if they affect the bed or banks of the river.

As a result of the above, the following is to be inserted on page 5 of the 1980 *General Management Plan,* after the first paragraph under "Management Objectives:"

The management objectives for the Merced River corridor focus on protecting and enhancing river values. These objectives are presented first in Chapter 5 of the Merced River Plan and summarized in Table A-1 of this document to demonstrate how they correspond to management objectives set forth in the 1980 *General Management Plan*.

LAND MANAGEMENT ZONING

The 1980 *General Management Plan* divided the park into several zones based on management objectives, significance of the resources, and legislative constraints. The zoning plan described the land use policies that management would work to achieve over the life span of the plan.

Much of the Merced River corridor exists within what are referred to as *natural zones (*including Wilderness Subzone, Environmental Protection Subzone, Outstanding Natural Feature subzone, Natural Environment Subzone, etc.). The Merced River Plan establishes boundaries and classifications for the river in accordance with the Wild and Scenic Rivers Act. While no additional zoning was established as a management tool in this plan, the management guidance provided in this Merced River Plan would remain consistent with the guidance established in these zones.

TABLE A-1: MANAGEMENT OBJECTIVES FOR FREE FLOW, WATER QUALITY, AND OUTSTANDINGLY REMARKABLE VALUES

River Value		General Management Plan Management Objectives	Merced River Plan Management Objectives
FREE-FLOWING CHARACTER (All Segments)		Restore altered ecosystems as nearly as possible to conditions they would be in today had natural ecological processes not been disturbed	Reduce the overall amount of human-constructed modifications within the bed and banks of the Merced River through restoration, redesign and other appropriate methods.
WATER QUALITY (All Segments)		Limit unnatural sources of air, noise, visual and water pollution to the greatest degree possible.	Maintain exceptional water quality on all segments of the Merced River within Yosemite National Park and El Portal Administrative Area.
BIOLOGICAL VLAUES	ORV 1. Numerous small meadows and riparian habitat IN (Segments 1 and 5)	Restore and maintain natural terrestrial, aquatic, and atmospheric ecosystems so they may operate essentially unimpaired	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.
	ORV2. Meadows and riparian communities of Yosemite Valley (Segment 2)	See above (ORV 1)	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.
	ORV 3. Sierra sweet bay (Segments 7 and 8)	Protect threatened and endangered plant and animal species and reintroduce, where practical, those species eliminated from natural ecosystems	Manage the Sierra sweet bay population to protect the abundance of the population along the South Fork Merced River
GEOLOGIC/HYDROLOGIC VALUES	ORV 4. Upper Merced River canyon (Segment 1)	See above (ORV 1)	Manage to allow natural processes to shape the landscape and associated geologic values.
	ORV 5. The "Giant Staircase " (Segment 2)	See above (ORV 1)	Manage to allow natural processes to shape the landscape and associated geologic values.
	ORV 6. Mid-elevation alluvial river (Segment 2)	See above (ORV 1)	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.
	ORV 7. El Portal Boulder Bar	See above (ORV 1)	Manage to allow natural processes to shape the landscape and associated geologic values.

TABLE A-1: MANAGEMENT OBJECTIVES FOR FREE FLOW, WATER QUALITY, AND OUTSTANDINGLY REMARKABLE VALUES

River Value		General Management Plan Management Objectives	Merced River Plan Management Objectives
CULTURAL VALUES	ORV 8. Yosemite Valley ethnographic resources (Segment 2)	Preserve, protect, or restore significant cultural resources (historic and prehistoric) Identify, evaluate and determine the significance of cultural resources encompassing buildings, structures, sites and objects Provide for the preservation, restoration, or protection of these significant cultural resources Permit only those uses that are compatible with the preservation of significant cultural resources.	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.
	ORV 9. Yosemite Valley Archeological District (Segment 2)	See above (ORV 8)	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.
	ORV 10. Yosemite Valley Historic Resources	See above (ORV 8)	The Yosemite Valley Historic Resources ORV will be managed to ensure protection and enhancement of this historic development system and its setting. Protection and enhancement entails ensuring that human activities do not adversely affect (per WSRA) the collective ORV or the landscape characteristics of the Yosemite Valley Historic District, within the river corridor, described above. While individual elements of the collective ORV may be lost, the collective of elements will continue to represent the important historic patterns of development in Yosemite Valley, and reflect the important landscape characteristics of the Yosemite Valley Historic District.
	ORV 11. El Portal Archeological District (Segment 4)	See above (ORV 8)	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 and integrity.
	ORV 12. Rock Ring Features (Segment 5)	See above (ORV 8)	Prehistoric archeological sites with rock rings along the South Fork of the Merced River above Wawona will be monitored to ensure that human impacts do not adversely affect the essential character and integrity of the sites.
	ORV 13. Wawona Archeological District (Segments 5-8)	See above (ORV 8)	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 and integrity.
	ORV 14. Wawona Historic Resources	See above (ORV 8)	These structures will be managed to ensure the protection and enhancement of their historical integrity. Protection and enhancement will ensure that management actions, including managing for visitor uses, do not adversely impact the ORV.

TABLE A-1: MANAGEMENT OBJECTIVES FOR FREE FLOW, WATER QUALITY, AND OUTSTANDINGLY REMARKABLE VALUES

River Value		General Management Plan Management Objectives	Merced River Plan Management Objectives
SCENIC VALUES	Scenic Value ORV 15.Montaine lakes, pristine meadows, slickrock cascades, and High Sierra peaks (Segment 1)	Identify the major scenic resources and the places from which they are viewed Provide for the preservation or protection of existing scenic resources and viewing stations Provide for historic views through vista clearing Permit only those levels and types of use that are compatible with the preservation or protection of the scenic resources and with the quality of the viewing experience	The NPS will focus efforts primarily on development in the river corridor. While visitor density or encounter rates can affect one's ability to appreciate scenery, visitor use is more appropriately addressed by the Recreation ORV. Similarly, bare soils and river bank erosion can affect foreground views, but are better addressed by the Biological ORV. This high country segment is also susceptible to regional air quality impacts, so the NPS will participate in regional efforts to reduce air pollution. Human activity contributes only to highly localized air quality problems. The NPS would maintain the visitors' ability to experience and appreciate the Scenic ORV by providing a river corridor that is relatively free of development.
	ORV 16. Iconic scenery of Yosemite Valley (Segment 2)	See above (ORV 15)	Segment 2 is 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 remove unnecessary facilities from the river corridor and ensure that all future development satisfies objectives that provide low contrast ratings under the VRM system analysis: form, line, color and texture. A Sense of Place: Design Guidelines for Yosemite Valley (NPS 2004) established architectural and site design guidelines that are intended to promote harmony between the built and natural environments.
	ORV 17. Continuous cascade under Sierra outcrops and domes (Segment 3)	See above (ORV 15)	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.
	ORV 18. Vast scenic beauty (segments 5 and 8)	See above (ORV 15)	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.

TABLE A-1: MANAGEMENT OBJECTIVES FOR FREE FLOW, WATER QUALITY, AND OUTSTANDINGLY REMARKABLE VALUES

River Value		General Management Plan Management Objectives	Merced River Plan Management Objectives
RECREATIONAL VALUES	ORV 19. Wilderness-oriented recreation (Segment 1)	Assist all people in understanding, enjoying, and contributing to the preservation of the natural, cultural, and scenic resources Provide only for those types and levels of programs and activities that enhance visitor understanding and enjoyment of park resources	Provide for high quality river-related recreational opportunities oriented toward Wilderness values of unconfined, self-reliant and solitude experiences in a setting that is consistent with the Wilderness character of the area.
	ORV 20. Yosemite Valley recreation (Segment 2)	Assist all people in understanding, enjoying, and contributing to the preservation of the natural, cultural, and scenic resources Provide only for those types and levels of programs and activities that enhance visitor understanding and enjoyment of park resources Permit only those levels and types of accommodations and services necessary for visitor use and enjoyment of Yosemite Provide transportation services that facilitate visitor circulation and enhance preservation and enjoyment of park resources	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.

POLICIES AND PROGRAMS

The 1980 *General Management Plan* established a visitor carrying capacity that was based on the capacity of facilities and infrastructure in the park at that time (NPS 1980: 15-19). The plan recommended changes to the kinds and levels of development to fulfill and support the plan's objectives.

Understanding of visitor uses and capacities has expanded and changed since the *General Management Plan* was published; similarly, the Wild and Scenic Rivers system has also expanded to include the Merced, South Fork Merced, and Tuolumne Rivers in Yosemite. Litigation on the Merced Wild and Scenic River Comprehensive Management Plan resulted in additional directives regarding the establishment of "specific numerical limits" as part of the Wild and Scenic Rivers Act mandate to address user capacity.

For these reasons, the visitor use limits and rationale proposed in the 1980 *General Management Plan* have been revised. Alternative 5 from the Merced River Plan proposes a user capacity program that establishes the kinds and amounts of visitor use that can be permitted while protecting and enhancing river values in the Merced River corridor, including a maximum number of people. This includes specific measurable limits on day and overnight use levels for each river segment. The Merced River Plan also establishes a program of indicators and standards to assess the condition of river values over time to ensure that these limits and management programs continue to be protective of all river values (see Chapter 6).

This new user capacity program will guide each new planning effort undertaken in the Merced River corridor and will therefore amend the *General Management Plan* for areas within the Merced corridor as regards user capacity. The following specific sections are added to page 15 of the 1980 *General Management Plan:*

- The first paragraph under "Park Policies and Programs" shall have this addition:

  Parkwide policies and programs with respect to visitor use, Indian cultural programs, park operations and visitor protection described in this section have been amended by the Merced River Plan for all areas within the Merced River corridor.

- The first paragraph under "Visitor Use" shall have this addition:

  The sections below that address appropriate activities, visitor use levels, visitor facilities and services, overnight accommodations, concessions, regional cooperation, transportation, interpretation, and provisions for special populations will be guided by the management elements of the Merced River Plan. Visitor use levels and activities are further guided by, and must comply with, the management elements of the Merced River Plan. In the event of a conflict between Parkwide Policies and Programs in the General Management Plan *and specific elements of the Merced River Plan, the Merced River Plan will control.*

- The first paragraph under "Visitor Use Levels" shall have this addition:

  The section below that addresses visitor use levels, visitor facilities and services, overnight accommodations, and transportation for the Merced River corridor in Yosemite Valley, El Portal, and Wawona is amended by the Merced River Plan. Specifically, General

Management Plan *visitor use levels for Yosemite Valley, El Portal, and Wawona are no longer in effect. These visitor use levels are superseded by the user capacity management program in the Merced Wild and Scenic River Comprehensive Management Plan.*

- The table on page 17 under "Visitor Use Levels" shall have these additions:

TABLE A-2: USER CAPACITY AMENDMENTS TO THE GMP FOR SEGMENT 2

	GMP	Current management or "No action"	Alternative 5: Enhanced experiences and essential riverbank restoration
Visitor overnight capacity			
Camping	~3,301	2,892	4,032
Lodging	~4,410	3,672	3,697
Total	**7,711**	**6,564**	**7,729**
Visitor day-use capacity			
Day parking	~3,685	7,260	7,549
Regional transit	~6,845	293	684
Tour buses		720	720
Total	**10,530**	**8,272**	**8,954**
Administrative capacity			
Employee housing	480	1,315	1,136
Employee day parking	Not Specified	332	332
Total	**480**	**1,647**	**1,468**
TOTAL SEGMENT CAPACITY	**~18,721**	**16,483**	**18,151**

TABLE A-3: USER CAPACITY AMENDMENTS TO THE GMP FOR SEGMENT 3

	GMP	Current management or "No action"	Alternative 5: Enhanced experiences and essential riverbank restoration
Visitor overnight capacity			
People at one time at parking areas	Not Specified	470	470
People at one time on roadway	Not Specified	399	399
Total	Not Specified	**869**	**869**
Administrative capacity			
Employee housing	0	9	9
Administrative day parking	Not Specified	4	4
Total	Not Specified	**13**	**13**
TOTAL SEGMENT CAPACITY	Not Specified	**882**	**882**

TABLE A-4: USER CAPACITY AMENDMENTS TO GMP FOR SEGMENT 4

	GMP	Current management or "No action"	Alternative 5: Enhanced experiences and essential riverbank restoration
Visitor day-use capacity			
People at one time at parking areas	~392	740	740
Administrative capacity			
People in residential housing	680	192	288
Administrative staff PAOT	Not Specified	1,220	1,220
TOTAL SEGMENT CAPACITY	**~1,072**	**2,152**	**2,248**

TABLE A-5: USER CAPACITY AMENDMENTS TO GMP FOR SEGMENTS 6 AND 7

	GMP	Current management or "No action"	Alternative 5: Enhanced experiences and essential riverbank restoration
Visitor overnight capacity			
Wawona Hotel	~345	247	247
Wawona Campgrounds	~1,980	618	540
Visitor day-use capacity			
Day parking	Not Specified	911	911
Regional transit	Not Specified	0	311
Tour buses	Not Specified	384	384
Administrative capacity			
Employee housing	410	121	121
Administrative day use	Not Specified	60	60
TOTAL SEGMENT CAPACITY	**~2,735**	**2,368**	**2,574**

DEVELOPED AREA PLANS

The *General Management Plan* contained Developed Area Plans for the Yosemite Valley, El Portal and Wawona within the Merced River corridor (NPS 1980: 62-65). Future plans for Yosemite Valley, El Portal and Wawona must comply with the management elements of the Merced River Plan (boundaries, classifications, Outstandingly Remarkable Values and their protection, Section 7 determination process, user capacity program, restoration program, monitoring program, and management actions). Therefore, the development concepts presented in the *General Management Plan* have been amended by Alternative 5 of the Merced River Plan.

The Merced River Plan will provide guidance for any future development or redevelopment activities within the Merced River corridor, including the development concepts as described in the 1980 *General Management Plan*. While some of the *General Management Plan's* site planning goals are compatible with those established in the Merced River Plan, the range of site planning alternatives for the Merced River Plan has been developed with particular focus on the protection of river values. To the extent that any development concept presented in the *General Management Plan* would not comply with the elements of the Merced River Plan, that development concept is superseded by the Merced River Plan. Therefore the specific actions called for in the Yosemite Valley, El Portal, and Wawona sections of the *General Management* Plan are replaced by those management actions called for in the Merced River Plan, which has ensured that all actions protect and enhance river values. Actions adjacent to the river corridor but outside of the river boundary must also protect the Merced River's established Outstandingly Remarkable Values.

For this reason, the following paragraph is to be inserted into the *General Management Plan* on page 32:

> *Future plans for the Yosemite Village, Yosemite Lodge, Curry Village, the Ahwahnee, Yosemite Valley Campgrounds, Other Valley Areas, Cascades, Arch Rock, El Portal, and Wawona must comply with the management elements of the Merced River Plan (river boundaries, river classifications, Outstandingly Remarkable Values, Section 7 determination process, user capacity management program, ecological restoration program, monitoring program, and management actions). To the extent that any development concepts presented in the* General Management Plan *do not comply with the elements of the Merced River Plan, that development concept would be superseded by the Merced River Plan. Actions adjacent to the river corridor but outside of the river boundary must also protect the Merced River's established Outstandingly Remarkable Values.*

A more detailed list of the specific actions that would be amended by the Merced River Plan is included in Table A-7.

Wilderness

The *General Management Plan* was published four years before the Yosemite Wilderness was designated in 1984. Although the area encompassed by Segments 1 and 5 were not designated as wilderness at the time the *General Management Plan* was written, backcountry management objectives were established, along with zones, capacities, and visitor use management strategies.

The Merced River Plan would continue to steward the wild segments of the river in accordance with provisions of the Wilderness Act and overarching goals for backcountry management as articulated in the *General Management Plan*. Furthermore, 1,900 acres within Little Yosemite Valley would continue to be managed as wilderness as indicated in the *General Management Plan*. An upcoming Wilderness Stewardship Plan will provide further guidance on wilderness activities in the river corridor.

TABLE A-6: USER CAPACITY AMENDMENTS TO THE GMP FOR SEGMENTS 1 AND 5

	GMP	Current management or "No action"	Alternative 5: Enhanced experiences and essential riverbank restoration
Visitor overnight capacity			
Wilderness zone user capacities			
LYV Zone	Not Specified	150	150
Merced Lake Zone	Not Specified	50	50
Washburn Lake Zone	Not Specified	100	100
Mount Lyell Zone	Not Specified	10	10
Clark Range Zone	Not Specified	10	10
South Fork Zone	Not Specified	15	15
Johnson Creek	Not Specified	5	5
Chilnualna Creek	Not Specified	0	0
Merced Lake HSC	Not Specified	60	42
Total	Not Specified	**400**	**382**
Visitor day-use capacity			
Half Dome "pass through" use	Not Specified	300	300
Other day use	Not Specified	50	50
Total	Not Specified	**350**	**350**
Administrative capacity			
Employee housing	Not Specified	15	15
Administrative day patrols	Not Specified	10	10
Total	Not Specified	**25**	**25**
TOTAL SEGMENT CAPACITY	Not Specified	**775**	**757**

The Merced River Plan would revise and augment management of commercial use throughout the river corridor consistent with the Extent Necessary Determination (Appendix L).

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
ALL SEGMENTS: Visitor Use			
Picnicking	Provide additional opportunities for picnicking in Yosemite Valley		***Lower River*:** Add 8 picnic tables. ***Swinging Bridge*:** Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. ***Sentinel Beach*:** Redesign the picnic area in its current location to accommodate picnicking. ***Cathedral Beach*:** Direct use to more resilient areas. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain.
SEGMENT 1: Merced Lake High Sierra Camp			
Lodging		56 tent cabins at 5 locations	Retain the Merced Lake High Sierra Camp, reducing the capacity to 11 units (42 beds). Replace the flush toilets with composting toilet.
SEGMENT 2: Yosemite Valley Transportation			
Valley Shuttle	New bus service at El Portal, Crane Flat and Wawona	Improve operation, expand service	Expand shuttle system to West Valley and Wawona Construct shuttle bus stops at Camp 4 and El Capitan Meadow
Regional Transit	Integration with regional transportation systems		Expanded regional public transit.: new service between Fresno and Yosemite Valley
Transportation System	Traffic controls at Pohono and El Capitan crossovers to restrict access when daily limits are reached		Transportation fees at entrance stations and East Yosemite Valley day-use parking permit system for peak season
Private Vehicles	Private vehicles ultimately excluded from Yosemite Valley		No ultimate exclusion of private vehicles
SEGMENT 2: Employee Housing			
Yosemite Valley Concessioner Employee Housing	450 Concessioner Employee Housing Beds		972 concessioner beds in Yosemite Valley; temporary housing with 439 beds removed; permanent housing with 318 beds replaced in Yosemite Valley.

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 2: Employee Housing (cont.)			
Tecoya Dorms and Ahwahnee Row	Retain 34 homes at Upper Tecoya Remove 22 Ahwahnee Row residences		Housing and development between Village Store and Ahwahnee Meadow remain.
Yosemite Lodge	Remove 48 tent cabins Retain dormitory housing for 200 concessioner employees		Remove old and temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces.
Curry Village	Remove 75 tent cabins/ Retain 75 tent cabins to accommodate 150 employees		Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.
Concessioner Stables	Not Specified		Retain associated housing (25 beds).
SEGMENT 2: East Yosemite Valley Campgrounds			
Showers		Add concessioner-operated showers at major campgrounds	Not mentioned.
Yosemite Valley Campgrounds	Remove campsites and other development adjacent to the river		Remove all campsites within 100' buffer of the ordinary high-water mark. Restore 6.5 acres of riparian habitat. Designate river access point at North Pines campground.
Backpacker's Campground	Not mentioned		26 sites total (15 removed, 16 added)
Upper Pines	240 sites (18 removed)		238 campsites Remove 2 sites for cultural resource concerns. Add 36 RV sites Add 51 walk-in sites including 2 group sites.
Lower Pines	173 sites (22 removed)		71 sites (5 removed from 100' buffer)
North Pines	86 sites (25 removed)		72 sites (14 removed from 100' buffer)
Upper River Campground	109 sites (15 removed)		32 sites
Lower River Campground	102 sites (36 removed)		40 walk-in sites
Muir Tree and Sunnyside (Camp 4) Walk-In Campgrounds	58 sites		Muir Tree not mentioned. 70 walk-in sites (add 35 sites)
Group Campground (Yellow Pines?)	14 sites		4 group sites (up to 120 people).

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 2: Ahwahnee Hotel Area			
Lodging		123	Same
Restaurant, Bar, Sweet Shop, Gift Shop		Dining room with 360 seats inside, 65 seats outside Retain bar, sweet shop, and gift shop	Same
Golf Course and Tennis Courts		Golf course and tennis courts removed	Same
Hotel Services		Typical deluxe hotel services: doorman, bell service, room service, concierge, etc.	Remove pool.
Parking	132 spaces		231 spaces (formalize and add 50 spaces)
SEGMENT 2: Yosemite Village Area			
Village Store		Grocery, deli, photo service (close 4-hour developing), recycling redemption center, transportation kiosk, gift shop and Village Grill (20 inside seats); remove beauty shop, uniform center, enlarge restrooms	Village Store and Grill retained Village Sport Shop repurposed as visitor contact center
Concessioner Garage		Remove Valley Garage from Yosemite Valley	Remove Concessioner Garage building, relocate limited functions to Government Utility Building
Bank		Remove sales office; move ATM/check cashing to another location; adapt use for art activity center	Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building).
Concessioner General Offices	Retain Concessioner Headquarters Building	Remove building, relocate functions	Building is removed from river corridor. Essential functions infilled into the mezzanine of the existing Concessioner Maintenance and Warehouse Building behind Valley Visitor Center
NPS Headquarters	Relocate NPS headquarters to El Portal		Not mentioned
Concessioner Fire Station		Remove existing building, construct new fire station	Not mentioned

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 2: Yosemite Village Area (cont.)			
Housekeeping	Remove 68 units (34 buildings) and retain 232 units	Retain small camp store Retain shower and coin-operated laundry	Remove 34 lodging units and redesign out of the ordinary high water mark. Retain a total of 232 lodging units. Remove the grocery store.
SEGMENT 2: Yosemite Lodge			
Lodging		Retain 440 units (Subject to minor design-related adjustments.)	Retain 245 units
Restaurant, Bar, Store, Gift Shop		Retain with approximately 640 seats inside, 40 outside; remodel within existing service area Design smaller bar elsewhere in restaurant complex Retain gift shop; remove clothing sales, use space for information, interpretation	Not mentioned
Bike Stand		Move to site near bike trail	Remove bike rental
Swimming Pool and Snack Stand			Remove swimming pool and snack stand
Service station		Redesign 27 mini-service pumps	Not mentioned
Post Office	Remove post office		Same
Residence 1	Remove Residence 1, Garage, and access road		Relocate Residence 1 (the Superintendent's House) to the NPS housing area and rehabilitate the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012).
SEGMENT 2: Curry Village			
Total Lodging Units		420 (subject to minor design-related adjustments)	453
Stoneman House		18	18
Cabin Rooms		252	145
Cabins without baths		0	0
Tent Cabins		150	290

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 2: Curry Village (cont.)			
Food Service, Bar, Merchandise		Redesign food service and fast-food units; approximately 370seats inside; Relocate bar away from picnic setting; Redesign Meadow Deck building for combined mountaineering center and sports shop, enlarge grocery store, add deli, separate gift shop	Retain Curry grocery store, pizza deck and bar, pavilion and cafeteria, and swimming pool.
Ice Rink, Bike, Ski, and Raft Rental		Retain and redesign ice rink Provide bike rental at ice rink Redesign Meadow Deck building with space allocated for cross country ski rental Retain raft rental near ice rink	Remove the Happy Isles snack stand and Curry Village ice rink.
Happy Isles Snack Stand		Retain seasonal operation	Remove Happy Isles Snack Stand
Ice Rink Parking	Remove 25 spaces		
Curry Dump Parking	Remove 160 spaces		
Shoulder parking at east end of tent cabin area	Remove 10 spaces		
Curry Orchard	Remove 200 spaces		430 spaces
SEGMENT 2: Concessioner Stables			
Concessioner Stables		Move stables from river bottom to old Curry dump sites	Retain Concessioner Stables in Yosemite Valley in its current configuration. Kennel service remains. Eliminate commercial day horseback rides from Yosemite Valley. Retain associated housing (25 beds).
Commercial Horseback Rides		Retain services including various rides in Yosemite Valley, to valley rim areas and overnight, limit valley routes, require interpretation, discontinue pony rides	Eliminate commercial day horseback rides from Yosemite Valley.
Kennel		Retain at stables	Same

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 2: West Valley			
Former Bridalveil Sewage Treatment Plant	Remove sewage treatment plant and ponds near Bridalveil Meadow and restore area		Same
SEGMENTS 3-4: Gorge and El Portal			
Arch Rock Residences	Remove 2 residences		Not mentioned
Visitor Services	Provide information/reservation station and develop a community museum at the Bagby station		Not mentioned
Commercial Facilities	Provide automobile service, restaurants, grocery store, clothing and gift sales, bank, beauty and barber shop		Not mentioned
Remote Parking	150 spaces (Greenmeyer Sandpit)		200 spaces (Abbieville/El Portal Trailer Village)
Other Facilities and Services	NPS Administration Building		Not mentioned
	Concessioner Administrative Building		Not mentioned
	NPS and concessioner maintenance, warehousing, laundry and bus service		Not mentioned
	NPS and concessioner open storage		Not mentioned
	Residential amenities including community recreation and services, open space and landscaping, utilities, meeting hall, fire station, post office, and law enforcement facilities		Not mentioned
SEGMENTS 3-4: Employee Housing			
NPS Employees	70permanent and 80 seasonal		Not mentioned
Concessioner Employees	390 permanent, 60 seasonal		84 beds in Rancheria Flat 12 beds constructed in Old El Portal

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENTS 3-4: Employee Housing (cont.)			
Other Employees	Permanent and seasonal housing for other employees (about 80)		Not mentioned
SEGMENT 5-8: Wawona			
Wawona Hotel Lodging		104	Same
Wawona Hotel Commercial Services	Retain golf course, stables, tennis court and swimming pool	Redesign store and gift shop to historic scene Retain dining room bar service Retain hotel dining room, golf shop snack bar, add small restaurant outside hotel complex: approximately 170 seats inside, 50 outside	Retain golf course, tennis court, restaurant, and swimming pool. The stables operation and day rides are retained.
Wawona Hotel Parking	Remove parking from in front of the hotel complex and construct a 145-car area north of complex. Provide 50 day use parking spaces adjacent to Wawona Hotel complex		Not mentioned
Chilnualna Trailhead Parking	Provide trailhead parking (50 spaces) at Chilnualna Falls trailhead		Not mentioned
Pioneer History Center Parking	Redesign parking area so users are not required to cross traffic		Not mentioned
Wawona Campground	100 sites 30-person group camp; Relocate campground amphitheater		83 sites Remove 13 sites that are either within 100 feet of the river or in culturally sensitive areas.
Wawona Stock Campground	Retain 25-horse campground		2 sites relocated to area near the Wawona Maintenance Yard.
Section 35 Camping	Construct 200-site campground in Section 35		Not mentioned
Picnicking	Provide additional picnicking and parking areas as needed		Increase the number of picnic benches to accommodate more picnicking near the store.

Facility/Service/Activity	GMP	CSP	Amendment to GMP/CSP
SEGMENT 5-8: Wawona (cont.)			
Transportation	Provide winter bus service to Badger Pass and year-round bus service to Yosemite Valley		Expand shuttle system to West Valley and Wawona
SEGMENTS 5-8: Employee Housing			
Wawona Employee Housing	410		121

APPENDIX B

CUMULATIVE ACTIONS

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CUMULATIVE ACTIONS

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

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

The cumulative projects addressed in this analysis include past and present actions, as well as any planning or development activity currently being implemented or planned for implementation in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine if they have any additive impacts on a particular resource. The following are considered in the analysis of cumulative impact projects for this project.

PAST

Ahwahnee Fire and Life Safety Improvements Project

The Fire and Life-Safety Improvements Project for The Ahwahnee involved the installation of automatic fire sprinklers, fire/smoke detectors, and fire alarm systems throughout the National Historic Landmark building. The installation of the fire and life-safety equipment affected every room of the building and involved varying amounts of disruption to the historic finishes. Once the installation was completed, all disrupted finishes were restored with in-kind repairs and finishes. Improvements to fire-safe the 2nd floor corridor and to widen the existing exterior south stair from the 2nd floor to ground level were completed to meet code.

Cascades Diversion Dam Removal

The Cascades Diversion Dam was located on the main stem of the Merced River at the far west end of Yosemite Valley. The dam was a timber "crib" structure with associated concrete abutments. Removing the dam was part of the overall intent of the Merced River Plan and Yosemite Valley Plan to restore free-flowing conditions to the Merced Wild and Scenic River. In its deteriorated condition, the dam presented a significant public health and safety hazard due to the potential for uncontrolled collapse. Removal of this structure and related facilities was completed in 2004.

Cascades Housing Removal

The Cascades area houses became cost prohibitive to maintain because of substandard construction and inadequate site development (drainage) and non-compliance to construction codes. The houses

contained asbestos and lead paint concerns; abatement costs would have been prohibitive. Removal of these structures was deemed compatible with park values, and the General Management Plan targeted these structures for removal. While the houses were nominated for the Historic Register, they were approved for removal. The removal included the complete removal of structures and foundations, while significant historical components were saved. Five housing units were removed and area vegetation was restored. The project was completed in 2004.

Cook's Meadow Ecological Restoration

This project is restoring a dynamic and diverse wetland ecosystem. The Cook's Meadow restoration project involves the following actions:

- Filling four drainage ditches created by early Euro-American settlers
- Removing a raised, abandoned roadbed and a trail that bisected the meadow
- Reconstructing the trail on an elevated boardwalk that now allows water to flow freely and reduces foot traffic on sensitive meadow plants
- Installing culverts under Sentinel Road to direct runoff into the meadow and restore the natural flow of water from the Merced River during seasonal periods of high water
- Reducing non-native plant species encroaching on native species by using manual, mechanical, and chemical control methods. This project was completed at the end of 2005, and ongoing monitoring will continue.

Curry Village Employee Housing

This project includes the design and construction of new employee housing and related facilities to accommodate approximately 217 concessionaire employees in the area west of Curry Village in Yosemite Valley. This housing will replace concessionaire housing lost in the January 1997 flood. The employee housing units have been designed in accordance with the character of the area, with particular focus on the Curry Village Historic District. The scope of this housing project includes providing parking and access, an employee wellness center, concessionaire housing, management offices, maintenance facilities, postal facilities, and housing related storage. The compliance for this project was completed in 2004, and construction was completed in 2007.

Curry Village Huff House Temporary Housing

This temporary solution was developed in consultation with litigants as part of a settlement agreement concerning the Merced Wild and Scenic River Comprehensive Management Plan. This action provided temporary lodging for 102 employees, and was needed to help meet immediate short-term housing needs for the park concessioner until permanent employee housing is available. The Huff House housing area includes the historic Huff House, and is located within the Yosemite Valley Historic District and the Camp Curry Historic District cultural landscape. This project installed 51 temporary, portable kiosk-like hard-sided cabins without baths (WOBs) and/or canvas tent cabins, and 2 modular shared facilities at infill and peripheral locations at the existing Huff House temporary

employee housing area at Curry Village in Yosemite Valley. The 21 temporary structures placed in infill locations were tent cabins salvaged from the closed areas of Curry Village. Installation of 30 additional temporary tent cabins or WOBs along the northern edge of the Huff House housing area, plus installation of the two shared modular facilities, and relocation of one WOB to an infill location were also accomplished under this project. This project was completed in fall 2009.

Curry Village Registration Building, Guest Lounge and Amphitheater Rehabilitation

This project included the rehabilitation of the Curry Village registration, lounge, and amphitheater structures. The lounge project included the complete rehabilitation of the building's architectural, structural, mechanical, and electrical systems. Included in the project were repairs and improvements to the outdoor amphitheater on the south end of the lounge building. The registration building project included the complete rehabilitation of the building's architectural, structural, mechanical, and electrical systems. All rehabilitation work was constructed in compliance with the Secretary of the Interior's Standards for Rehabilitation.

This project corrected the structural deficiencies of these buildings by rehabilitating building foundations and roof trusses to meet current loads. The project provided an adequate HVAC system, electrical wiring that meets the current National Electric Code, and a fire alarm and suppression system for each building. The building's exteriors were restored, including siding, windows, doors and all building trim to a level where cyclic maintenance can be performed without significant restoration. Federal accessibility standards were incorporated into the project.

Curry Village Temporary Guest Showerhouse

This project installed a temporary guest shower house in the Curry Village area to help offset the loss of guest bathroom facilities resulting from rockfall events that occurred fall 2008. The guest shower house consists of two 40' modular units which house men's, women's, and two accessible shower and restroom services. The two modular buildings are connected by a shared pitched roof over an 8' wide center breezeway which allows access to the facilities in inclement weather with minimal snow removal needed. The building in its entirety is approximately 40' long, 32' wide and 15' tall at the center roof line. This project includes the installation of a covered accessibility compliant ramp at the western side of the structure, and stairs at the eastern side of the building. Additionally, this project proposed to improve the adjacent paved pathway for improved accessibility from the Curry Village parking area. This project was completed in summer 2009.

El Portal Road Improvement Project

Significant damage occurred during the 1997 flood, necessitating an almost complete reconstruction of the El Portal Road. Since then, the NPS has rebuilt the westernmost 6.5 miles of the road — referred to as Segments A, B, and C — but prior to completion, reconstruction of the final one-mile segment of the project, referred to as Segment D, was halted as a result of a successful legal challenge. The court

decision directed the NPS to prepare a comprehensive management plan for the Merced Wild and Scenic River before completing road repairs.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in July, 2007. Actions were completed in 2008.

Fern Springs Restoration

Ecological restoration, split rail fencing, and an interpretive wayside exhibit comprised Phases 1 and 2 of this project. Actions were completed in 2007.

2004 Fire Management Plan/EIS

This plan guides a complex fire management program, including 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. The plan calls for the use of prescribed fire and passive fuel reduction techniques to achieve protection and ecosystem restoration goals. More aggressive treatment strategies are prescribed in developed areas, if needed. Managed wildland fires (lightning-ignited fires) are allowed to burn where practicable, if specific conditions are present.

Happy Isles Dam Removal

The Happy Isles Dam impoundment was located at the eastern end of Yosemite Valley, had been abandoned since the mid-1980s. The remaining infrastructure consisted of a low rock and concrete dam, two steel-reinforced concrete and iron diversion gates, numerous pipes above and below ground near the dam, and an 8-foot by 12-foot granite powerhouse foundation. The dam and diversion gates cause a large eddy and scour pool (100 feet wide by 15 to 20 feet deep) directly upstream of the obstruction, which dramatically alters local hydrology, water chemistry, and ecology. The project consisted of removing Happy Isles dam and associated infrastructure and revegetating the riverbanks to prevent post-project bank erosion.

This project was completed in 2006.

Happy Isles Fen Habitat Restoration Project

The Happy Isles Fen is a 2-acre wetland immediately west of the Nature Center at Happy Isles in east Yosemite Valley. In 1928, the National Park Service filled in about 3 additional acres of the fen to create a parking lot. The asphalt parking lot was removed in 1970, though imported fill remained. The area affected by parking lot construction was restored to wetland conditions by removing imported fill and associated upland vegetation and revegetating with native wetland plants. This project was completed in the fall of 2003.

Happy Isles Gauging Station Bridge Removal

The Happy Isles Gauging Station Bridge spanned the Merced River in the east end of Yosemite Valley. The bridge was badly damaged during the January 1997 flood and was deemed unsafe by representatives of the Federal Highway Administration. The bridge began to show signs of immediate failure in 2000 when a large sinkhole appeared on the west abutment. Due to the threat to public health and safety, the bridge was removed in the fall of 2001, thereby improving free-flowing conditions of the Merced River. The east abutment was retained to protect the operation stream flow gauge.

The bridge was removed in 2001.

Happy Isles to Vernal Fall Trail Reconstruction

This project proposes to reconstruct 5,400 linear feet of the Vernal Fall Trail from Happy Isles to the base of the Mist Trail stairs. Actions include constructing an average tread width of seven feet, rebuilding trail walls, redistributing old pavement as a sub-base, and resurfacing. On steeper sections of the trail, improved traction will be provided for pedestrians. A functioning drainage system will be established in the trail corridor by paving water breaks and constructing rock drainages to channel water away from the trail.

Lower Yosemite Fall Project

The Lower Yosemite Fall area is the most highly visited natural feature in Yosemite National Park. The plan rehabilitated and reconstructed the existing system of trails and bridges, relocated the restroom, and removed the existing parking area in the Lower Yosemite Fall area.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in May, 2002. Actions were completed in 2004.

Merced River Ecological Restoration at Eagle Creek Project

Eagle Creek flows into Yosemite Valley immediately west of the Three Brothers rock formations and joins the Merced River about one-half mile downstream from Yosemite Lodge. The creek banks of the reach of Eagle Creek between Northside Drive and the Merced River were badly eroded and only sparsely vegetated, partly due to trampling by pedestrians. The eroded riverbank was recontoured, then revegetated; the trampled river terrace was decomplacted; and fences were constructed to direct visitors to sandbars for river access. The ecological restoration effort involved the following:

- Plug remaining portions of abandoned sewage lines with concrete and remove the manhole and the concrete structure that crosses the creek bed.
- Restore the eroded creek channel using methods previously tested on the banks of the Merced River. Restoration techniques require building up the bank with willow cuttings, woody debris, rock and mulch.
- Revegetate the bank of Eagle Creek with native shrubs, cuttings, and seeds.

- Redirect visitors to access the river in a more appropriate location that will not cause bank erosion.

This project was completed in 2003.

Red Peak Pass Trail Rehabilitation

This project reconstructed the trial from Red Peak Pass to the Triple Peak Fork of the Merced River. Work included rehabilitation of rock retaining wall, rip-rap tread, water breaks, terrace steps, and restoration of meadow rutting.

The project began in 2006 and was completed in 2011.

Rehabilitate Yosemite Valley Campground Restrooms

This project rehabilitated 19 six-stall restrooms in Upper Pines, Lower Pines, and North Pines Campgrounds, as well as the 15- to 20-foot walkway approach to each restroom. Work included replacement of partitions by installing graffiti-resistant surfaces, painting of exterior trim and interior walls and floors, replacement of mirrors and toilet paper dispensers, repair of outside privacy screens, improvements to meet Americans with Disabilities Act accessibility requirements, replacement of wall vents, replacement of signs, replacement of electric service panels, improvement of lighting, and replacement of fill materials for walkway approaches. This project was completed in 2004.

South Entrance Station Reestablish Exit Lane

The project included re-establishing the old road alignment for exiting-southbound traffic from Yosemite National Park and then completing asphalt repairs on the existing pavement surrounding the South Entrance Kiosk. Work included an initial geotechnical investigation to determine the roads design profile. With this design information the road subgrade was regraded and compacted, then compacted fill and base material was used to create a structurally sound subbase and then the final surface treatment was compacted asphalt pavement. The initial geotechnical investigation, included 2-deep borings up to 10-ft. deep (6" Dia.) and 3-shallow borings up to 2-ft. deep (6" Dia.), to determine the existing subgrade conditions and to develop the necessary design to withstand the current traffic loadings that use this road surface. This work also included relocation of telecommunication and power lines, a light pole, as well as abandonment of an existing ventilation shaft. Construction was completed May 2012.

Yosemite Valley Lost Arrow Temporary Employee Housing

This project temporarily located 6 units of portable housing for park concessionaire (DNC) employees from Curry Village to the existing 40 units of Lost Arrow temporary employee housing area at Yosemite Village, which was created subsequent to the 1997 flood that destroyed existing employee housing at other valley locations. This proposed temporary solution was developed as a part of the settlement agreement that also includes preparation of the Revised Merced Wild and Scenic River Comprehensive Management Plan/EIS. This project was completed in 2009.

Yosemite Valley Ahwahnee Temporary Employee Housing

Rockfall events at Curry Village in October 2008 resulted in the permanent closure of the Terrace tent cabin employee housing area and other hard sided structures located in the rockfall hazard zone at Curry Village, as revised and expanded based on analysis conducted after the October rock fall. Prior to the October 2008 rock fall, Yosemite Institute had use of tent cabins and hard-sided structures at Curry Village for student and teacher lodging. Subsequent to the closure of tent cabins and other hard sided structures within the revised rockfall hazard zone, the former Boys Town tent cabin employee housing was converted to student and teacher lodging for Yosemite Institute, leaving a deficit of DNC employee housing. Of the 293 Curry Village employee beds lost to closure or conversion as a result of the October 2008 rock fall, relocation of housing for DNC employees was essential to support visitor use. DNC needed to replace approximately 243 to 273 employee beds. This proposed temporary solution was developed in consultation with Friends of Yosemite as part of a litigation settlement that also includes preparation of the Revised Merced Comprehensive Management Plan and Environmental Impact Statement (EIS). This action provided temporary lodging for 12 employees, and was needed to help meet immediate short-term housing needs for NPS's concessioner (DNC) until permanent employee housing is available. This project was completed in 2009.

Yosemite Valley Loop road Rehabilitation

This project repaired and resurfaced existing roadway pavement, improved drainage facilities, and defined roadside parking throughout the project area. No widening or realignment of roadway off of the existing road bench was done. Areas with soft or poorly draining subgrade were excavated and replaced with better foundation materials. Low-lying areas subject to flooding will be evaluated with alternative concepts to determine the potential impacts.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in February 2006. Actions were completed in 2008.

Yosemite Valley Shuttle Bus Stop Improvements

This project consisted of the preparation of preliminary design plans, environmental compliance documents, and construction drawings; the construction of six, 10-foot by 80-foot concrete braking pads, and the rehabilitation or replacement of 94,000 square feet of asphalt road approaches and the construction of bus stop shelters. Construction was completed in 2010.

Wawona Road Rehabilitation Project

This project pulverized and repaved approximately 25 miles of the Wawona Road (Route 0014; FMSS# 10814) between Southside Drive and South Entrance. The proposal included minimal work at pullouts and intersections, which were within the existing paved footprint. This project did not alter the historic character of the road. The road width remained the same and all drainage improvements were done in accordance with the Secretary of the Interiors Standards for the Treatment of Historic Properties, in consultation with the Division of Resources Management and Science.

The existing 24-foot wide paved road will be recycled (pulverized) and overlaid with spot reconstruction of subgrade and shoulders as required.

Only minimal drainage work involving failed or severely undersized culverts will be included. For any culverts that are relatively deep, slip-lining will be considered.

Only minimal work at turnouts and intersections, which will be within the existing paved footprint.

Pavement borings will be required to design the structural section for the roadway, which would need to begin in March-April 2009 (Fifty borings, approximately every 1/2 mile over the 25-mile segment).

Areas disturbed by construction will be revegetated under guidance of the park revegetation staff.

This project was completed in 2011.

PRESENT

Yosemite National Park Annual Fire Management Plan (Operational Fire Management Plan)

Yosemite National Park's fire management program employs a variety of methods to accomplish and support fire and resource management objectives and to reduce the risk of wildfire in and adjacent to the park. Strategies in this plan are based on knowledge gained from fire and fuels research and monitoring. Federal fire policy has changed in the past 30 years from suppression of all wildfires to a policy allowing a single fire to be used as a tool to meet multiple land management and public safety objectives. Fuel reduction and prescribed burning have increased since the 1990 A-Rock Fire, and the fuels management program focuses on the wildland-urban interface to protect developed areas from uncontrolled wildfires. Yosemite National Park's 2008 Operational Fire Management Plan serves to utilize the new fire management guidelines in outlining procedures for managing fire in Yosemite National Park; for restoration and maintenance of ecosystems, for reduction of hazard fuels, for protection of natural and cultural resources, and for protection of wildland urban interface communities.

Ahwahnee Comprehensive Rehabilitation Plan

The purpose of this project is to develop a comprehensive plan for phased, long-term rehabilitation of The Ahwahnee National Historic Landmark hotel and associated guest cottages, employee dormitory, and landscaped grounds in order to:

- restore, preserve, and protect the historic integrity and character-defining features of The Ahwahnee by rehabilitating aged or altered historic finishes and contributing landscape features;
- enhance visitor and employee safety by bringing the buildings and grounds into compliance with current building, fire, life safety, and seismic standards;

- improve hotel energy efficiency and operations by repairing or replacing outdated or inefficient building systems and components; and
- protect and enhance the visitor experience at The Ahwahnee through improved operational efficiency, increased accessibility, and rehabilitation of historic resources.

After more than 80 years in service, the hotel and associated structures are in need of rehabilitation because the facilities at The Ahwahnee are not fully compliant with the most recent building and accessibility codes, including International Building Code (IBC), National Fire Protection Association (NFPA) Code, Federal Emergency Management Agency (FEMA), IBC seismic requirements, and Americans with Disabilities Act (ADA) standards.

Many of the electrical, plumbing, and mechanical systems serving The Ahwahnee facilities are aging and need to be replaced and updated. Some historic hotel finishes and landscape components are timeworn or have been altered over the years, potentially affecting the historic integrity of this property. The current operational layout of some working areas reduces the efficiency of providing a high level of visitor services.

The architectural team is currently evaluating the operational needs and code compliance needs of The Ahwahnee. These needs, along with recommendations from recent cultural landscape and historic structures reports, detailed seismic studies, and issues and concerns identified during public scoping, will inform the development of alternatives for this project. The *Scenic Vista Management Plan* has identified several vistas at the Ahwahnee that will be considered for management.

The Finding of No Significant Impact was signed on January 3, 2012. Implementation of the plan will be through a long-term, phased approach as funding becomes available.

Air Quality Monitoring and Air Pollution (California Air Resources Board)

SV, TRP- Human activities (such as suburban growth, industry, transportation, and farming and ranching) in the San Joaquin Valley, San Francisco Bay area, and Sierra foothills create air quality impacts that occasionally violate federal standards, particularly for ozone and for particulates. Some of these pollutants disperse into the Yosemite area, affecting the park's air quality and visibility. Yosemite is a Class 1 airshed according to the Clean Air Act, conferring additional protections upon the park (requiring cleaner air). Unfortunately, due to the long-distance transport of regional pollutants, the park has recorded between four and 24 exceedances of federal air quality standards for ozone annually for the last 10 years (a median of six exceedances). Additionally, the park suffers visibility degradation, especially on summer afternoons, due partly to particulate generation (the small portion of Yosemite within Madera County is a nonattainment area for particulates). While the California Air Resources Board has implemented some strict air pollution controls (such as the smog checks done biannually on all vehicles licensed for operation in the state) and seen associated improvements in air quality, impacts on the park's air quality and visibility continue. These impacts are expected to continue for the foreseeable future.

Scheduled/projected completion: This project is ongoing.

Invasive Plant Management Plan Update

There are over 150 non-native plant species in Yosemite National Park, which is approximately 10% of the park's flora. Of these, 28 species are listed for control by the U.S. Department of Agriculture, California Department of Food and Agriculture, or California Exotic Pest Plant Council. Species targeted for control in Yosemite include bull thistle, mullein, yellow star thistle, spotted knapweed, perennial pepperweed, purple vetch, rose and burr clovers, Himalayan blackberry, white and yellow sweet clover, non-native wildflowers, and escaped landscaping plants such as foxglove, ox-eye daisy, pink mullein, French broom, tree-of-heaven, and black locust. The current control program includes using Global Positioning System (GPS) technology to map plant populations. Crews then remove plants using a variety of techniques, including hand pulling. Treated areas are photographed and re-visited each year to assess the results and provide follow-up treatment.
The plan defines a set of comprehensive programs, including the following:

- Education and focused research.
- Prioritized prevention and control efforts using a variety of techniques and appropriate mitigation measures.
- Systematic monitoring and documentation of invasive plant status and the results of management efforts.
- Restoration of ecosystems altered by invasive plants.

Control methods being considered include some combination of thee following: hand-pulling or using various machines to try and remove plants; releasing predatory insects or fungus to attach plants; educating users and staff about preventative measures; and using chemical treatments derived from natural products like vinegar, or manufactured chemicals like glyphosphate. Program goals include eradicating (or at least controlling) invasive plant species; preventing new invasions; restoring and maintaining desirable plant communities and healthy ecosystem; enhancing the visitor experience; and educating park staff, partners, and users.

The original FONSI was signed in 2008 and an update was completed in 2011. Annual workplans are posted on the park website for public review.

Curry Village Rockfall Hazard Zone Structures Project

Built in the 1920s, rustic hard-sided cabins with bath and cabins without bath make up the majority of the structures in the closed zone. Six other structures include the Foster Curry Cabin (Tresidder Residence), associated visitor support structures (e.g., restrooms, shower house), and two non-historic structures.

The selected action will remove all structures as to maximize safety for park visitors and employees and eliminate the need for administrative access to the closed area. This entails documentation of the historic structures, salvage of historic materials for reuse, removal of all structures remaining in the rockfall zone, installation of interpretative materials, and allowing the area to return to its natural state.

The Finding of No Significant Impact (FONSI) was signed on February 7, 2012, and the corresponding Memorandum of Agreement (MOA) was signed on December 28, 2011.

Since the signing of the FONSI and MOA, new data determined that an additional five (5) buildings were located within the rock fall hazard area. The disposition of these structures will be amended to the Curry Village Rockfall Hazard Zone Structures Project FONSI and MOA. Implementation of the plan will occur prior to the signing of the Decision Document for the Merced River Plan in 2013.

Climate Change/Petition to list the pika as a threatened species (US EPA/US Fish and Wildlife Service)

It is now the accepted understanding in the scientific community that climate change (global warming) is presently occurring and that human activities are causing a substantial portion of such warming. In Yosemite, climatologists have noticed earlier snowpack melting in spring, higher spring temperatures, more precipitation falling as rain (instead of snow), dryer spring seasons, earlier green-up times, a three-degree increase in nighttime low temperatures, a 50% reduction in the size of Lyell Glacier, and increased mortality among conifers — all changes that are attributable at least in part to human activity.

Comparing contemporary small mammal ranges in Yosemite with those observed by Joseph Bird Grinnell in the early 20th century, biologists have determined that of the 28 small mammals observed in his studies, half had expanded their range upward by more than 500 meters (1,600 feet). The pika, a member of the rabbit family that tends to live at higher elevations, exemplifies this trend. The small animal is adapted to life at or above timberline, gathering and drying tundra grasses and forbs for winter use and possessing (for the rabbit family) small ears to minimize heat loss. Its high range means that if the animal responds to a warming climate by moving upslope, it may eventually run out of room to range. If climate change continues unabated and the pika's response to move upslope continues, it appears that there will be no higher elevations for the mammal to occupy. For this reason (and pursuant to a lawsuit from a conservation group against the USFWS), the animal is now a candidate for listing as a threatened species pursuant to the Endangered Species Act. At least two other species of small mammals, a chipmunk and a woodrat, have seen dramatic shrinkage in the overall size of their ranges, and are now extremely rare in Yosemite. Scheduled/projected completion: This project is ongoing.

Commercial Use Authorization for Commercial Activities

The purpose for the issuance of these commercial use authorizations (CUA, previously titled Incidental Business Permit) is to regulate and oversee operations of permit holders involved in conducting commercially guided day hiking, overnight backpacking, fishing, photography workshops, stock use (pack animal trips and pack support trips for hikers), and Nordic skiing activities in Yosemite National Park. In addition to the base CUA, additional uses and activities may be allowed depending on the holder's request and compliance with all applicable laws, regulations, and guidelines. Conditions for these additional activities are stipulated in the body of the individual permit for each activity. The permitted activities are to be conducted only in those areas of Yosemite National Park open to the public

and authorized by the permit. The permit holder is required to obtain any additional permits or licenses as required by law.

Permits are renewed annually.

Comprehensive Interpretive Plan

The Comprehensive Interpretive Planning (CIP) process is established in Director's Order 6 and is the basic planning component for interpretation. The CIP is a tool for making choices. It helps parks decide what their objectives are, who their audiences are, and what mix of media and personal services to use. The product is not the plan, but an effective and efficient interpretive program that achieves management goals, provides appropriate services for our visitors, and promotes visitor experiences.

The heart of the CIP is the Long-Range Interpretive Plan (LRIP) that defines the overall vision and long-term (five to ten years) interpretive goals of the park. The process that defines the LRIP also encourages development of targeted, realistic strategies and actions that work toward achievement of its goals. Actions divided into annual, achievable steps are reproduced in the Annual Implementation Plan. Creating annual plans via this "stepping down" of the LRIP simplifies much of the annual planning process because specific goals already have been identified in the LRIP. The last section of the CIP is the Interpretive Database, which is a compilation of information needed to build the other two components. It includes media inventories, the park's strategic plan, enabling legislation, visitor surveys, reports, a bibliography, and other basic information.

TL- The Comprehensive Interpretive Plan (CIP), which will outline a comprehensive approach to interpreting park natural and cultural resources. The CIP is necessary to ensure long-term protection of resources through visitor understanding and enjoyment.

The final product of this effort will guide interpretation and education in Yosemite for the next five to 10 years.

Crane Flat Utilities

This project (Phases 1 and 2) will replace the waterlines and appurtenances for the entire Crane Flat area with the goal of eliminating substantial loss in the system. The existing system includes 9,700 linear feet (lf) of 6" main, 4,066 lf of 4" main and 300 lf of 1" drain pipe. This existing distribution system was designed and installed in the mid 1960's. The system has reached its design life and replacement is required to meet facility maintenance goals. The substantial amount of leakage throughout the entire system eliminates section replacement or pipe-bursting as effective maintenance options.

Phase 1 was completed in 2009. Archeological and anthropological studies were conducted in 2010 to inform Phase 2 design.

East Yosemite Valley Utilities Improvement Plan

The existing utility infrastructure serving Yosemite Valley was identified as a potential problem due to its age, condition inadequate capacity, inaccessibility to future facilities and inappropriate location in environmentally sensitive areas. The National Park Service completed an Environmental Assessment and a Finding of No Significant Impact for the Utilities Master Plan was signed in October 2003 to allow efficient relocation and upgrading of utility systems to provide for utility needs while reducing long-term environmental impacts from utility repair and maintenance activities. Construction of phase 1 of the improvement began in 2005 and has been ongoing with implementation of the utility improvements occurring in three phases over 10 years.

Reconstructing Critically Eroded Sections of El Portal Road

The purpose of this project is to reconstruct the critically eroded sections of El Portal Roadand repair those portions of the road and embankment that are at risk of failure as a result of the damage initially caused by high-water events of the Merced River, including the devastating flood of January 1997. By promptly reconstructing the failing portions of El Portal Road, park visitors will be protected from the hazard of a sudden road failure, and access to Yosemite Valley will be maintained. The Finding of No Significant Impacts was signed in July 2007.

Fuels reductions/forest rehabilitation projects (US Forest Service)

The Sierra and Stanislaus national forests are both conducting a variety of projects aimed at reducing fuels and/or restoring more natural conditions in their west-slope Sierra forests. These projects have two primary purposes: to reduce the intensity and spread of wildfires across the landscape and near communities, and to reduce stand density within the lower and mid canopy layers of conifer stands to such a level as to provide for increased stand resiliency, growth, and vigor. To accomplish these goals, workers in the forests thin conifer stands to reduce stand densities and ladder fuels; masticate ladder fuels and brush/shrub patches; utilize prescribed burning, understory and pile; manually treat and/or prescribed burn noxious weed infestations; and site prepare and plant failed conifer plantations. Areas where such work is being conducted include:

- the Dinkey North and South areas about 30 miles northeast of Fresno, California;
- the High Sierra Ranger District (specifically, creating a fuel break);
- the Kings River drainage south of Yosemite;
- the Highway 4 corridor from Poison Spring to Spicer Road;
- the Calaveras Ranger District, Northeast of Dorrington, near Prather Meadows and Big Rattlesnake Creek;
- the Middle Fork Tuolumne River area;
- Greeley Hill and Wagner Ridge;

- the Twomile planning area, located within the Clavey River watershed, encompassing portions of Hull Creek, Twomile Creek, and the Clavey River;
- the Pacific Southwest Research Station;
- Fence Creek Road (6N06) and Wagner Cabin Tract; and
- Gooseberry Forest and Meadow, north of Bell Meadow and west of Gianelli Trailhead.

Scheduled/projected completion: Some form of fuel reduction/forest restoration is ongoing at all times in the west-slope Sierra national forests.

General Ecological Restoration

Yosemite National Park undertakes actions for ecological restoration as independent actions or as part of a larger plan on an ongoing basis. These actions involve a varying degree of compliance. Many of these projects are not major actions in themselves, but these actions collectively are considered in the analysis of this plan.

These actions are ongoing.

Yosemite National Park General Management Plan

As defined in the NPS park planning program standards, the purpose of the GM is to ensure that park managers and stakeholders share a clearly defined understanding of the resource conditions, opportunities for visitor experiences, and general kind of management, access, and development that will best achieve the park's purpose and conserve its resources unimpaired for the enjoyment of future generations. The GMP is the blueprint for improving and preserving the park for the next century. It was finalized and signed in 1980. The plan describes actions that would achieve five broad goals:

- Reclaim Priceless Natural Beauty;
- Markedly Reduce Traffic Congestion;
- Allow Natural Processes to Prevail;
- Reduce Crowding; and
- Promote Visitor Understanding and Enjoyment.

A complete description of how the Yosemite National Park GMP interfaces with the Merced River Plan is included in Appendix A.

Half Dome Trail Stewardship Plan

The NPS is developing a management plan to address impacts caused by crowding and congestion along the Half Dome trail. The purpose of this project is to provide appropriate opportunities for recreation on the Half Dome Trail given its location in designated wilderness. The wilderness character of the trail corridor and the ability of visitors to manage their own risk will be improved.

Increased use of the Half Dome Trail has led to conditions that adversely impact wilderness character, including:

- **Unconfined Recreational Experience:** Crowding and long lines on the sub dome, summit, and cables limit freedom of movement
- **Opportunities for Solitude:** High encounter rates on the trail result in inappropriate conditions for experiencing solitude in wilderness
- **Natural Conditions:** Visitor impacts include trail erosion, habituated wildlife, litter, and human waste have resulted in long-term effects to natural resources
- **Self-Reliance:** Queuing and congestion on the cables compromise the ability of hikers to manage their own risks

An interim permit system was implemented in 2010-2012, limiting day use on the trail to 400 people per day. The selected action limits use to 300 people per day.

The FONSI is anticipated in Fall/Winter 2012 and the plan will be implemented for the hiking season in 2013.

High Elevation Aquatic Resources Management Plan

Two species of native amphibians (Sierra Nevada yellow-legged frog and Yosemite toad) are experiencing serious population declines. Habitat restoration and preventative measures are needed to prevent additional loss and the potential extirpation or extinction of these species within the park or the Sierra Nevada, respectively. The presence of introduced nonnative invasive aquatic species is decreasing the abundance and distribution of native species, resulting in unnatural diversity and abundance, and impacting the healthy functioning Yosemite's high elevation aquatic ecosystems. Management action is needed to remove and limit the spread of existing invasive species, and prevent the introduction of new invasive species. Protection of the park's high elevation aquatic ecosystems requires an understanding of the current status of these systems and a framework for evaluating and prioritizing research needs and management actions that may be necessary to ensure that park resources and values within these systems are unimpaired.

Public Scoping was conducted in summer 2008.

Wahhoga Indian Cultural Center

In keeping with Yosemite's General Management Plan, the National Park Service entered into an agreement with the American Indian Council of Mariposa County, Inc. (also known as The Southern Sierra Miwuk Nation) in 1997 to work together in establishing an Indian Cultural Center at Wahhoga, the site of the last historically occupied Indian village in Yosemite Valley (just west of the Camp 4 walk-in campground). The center will provide a location for traditionally associated American Indian peoples to practice traditional cultural activities and ceremonies, as well as teach traditional lifeways. The center will be available to the public and provide a unique opportunity for visitor awareness of local Native American cultures. Through this understanding of local culture and traditions, guests will

gain a greater understanding of the park's natural and cultural resources and their significance to the cultural systems of traditionally associated American Indians. The project has been designed to include both traditional and modern structures. The traditional structures planned for the site include a ceremonial roundhouse, one sweatlodge, and numerous cedar bark umachas (conical houses), and a sun shelter and demonstration area. A historic cabin would be relocated to the site. A community building and small parking area would comprise the modern buildings and structures.

Construction on traditional structures began in 2009; there is no current estimated date for project completion.

Inyo National Forest Travel Management Plan and Forest Plan Revision (US Forest Service)

The U.S. Forest Service will be developing travel management plans and forest plans for all national forests in California over the next few years. Travel management plans specify which forms of travel are allowed in which areas of the national forests. Forest plans guide where and under what conditions an activity or project on national forest lands can generally proceed. Some of the forests have completed one or both of these tasks.

Scheduled/projected completion: mid-2010s.

Mariposa County General Plan Housing Element Update

Mariposa County is updating the Housing Element of its County General Plan. The Housing Element Update does not provide approval for any specific projects (no ground disturbance would result directly from this plan), but rather provides broad guidance to meet the California State legislature's intent of providing for the availability of housing, expanding housing opportunities, and accommodating the housing needs of all economic segments and income groups in the county.

Scheduled/projected completion: 2010.

Mariposa County General Plan (Update)

The Mariposa County General Plan updated the countywide zoning ordinances and related implementing documents. The update allowed Mariposa County to comply with current California law and changes to state law since the 1980 General Plan was adopted. This update followed established public involvement protocol and responded to countywide land-use issues. The Mariposa County General Plan update was completed in 2005.

Parkwide Communication Data Network

Yosemite National Park is implementing a Communications Data Network (CDN) infrastructure upgrade utilizing available, commercial off-the-shelf technology supporting a single "hybrid communication backbone" employed throughout the park -- to maximize existing equipment use,

minimize current and planned costs, to fulfill the park's future operational and security needs. This "backbone" will be a microwave and fiber optic pipeline used to transfer computer LAN data, radio communications, security and safety video systems, telephony, burglar/intrusion, fire alarm systems, traffic collection data, and telemetry throughout Yosemite. Upgrading the network also serves to enhance compliance and utilization of the narrowband and digital P25 compliant radio infrastructure as well as providing enhanced LAN connectivity for remote areas such as Wawona, Crane Flat, Hodgdon Meadows, and Tuolumne Meadows.

The CDN is designed to serves six geographic areas of the park as well as the five park entrance stations. The geographic areas include El Portal, Yosemite Valley, Wawona, Crane Flat Hodgdon, Tuolumne Meadows, and Hetch Hetchy. The final installation will be a hybrid infrastructure, based around proven microwave technology that linking the geographic areas with multiple T-3 level bandwidth managed as necessary by park staff. There will be no need to rely on an independent service provider for maintenance of the system, as the backbone will be maintained by park staff.

During the first phase of project design, a needs assessment, schematic design and installation strategy, and frequency study will be commissioned to identify what system components are needed for enhanced connectivity to the different geographic regions throughout the park. Possible backbone technologies include fiber optics, VHF radio, UHF radio, microwave radio, cellular, and satellite.

Fiber optic is envisioned as the solution to connect government facilities in the Wawona Maintenance area and also Big Oak Flat Entrance Station to the Hodgdon Maintenance area. Fiber optic will also be utilized to enhance infrastructure in Yosemite Valley resulting in all NPS administration facilities being located on one fiber network. Wireless bridges and pair gain technology will also be utilized to connect remote facilities as required.

A Finding of No Significant Impact was signed for the Parkwide Communications Data Network and Environmental Assessment in May 2010. This project will be implemented over 5-10 years.

Recreational Facility Analysis (US Forest Service)

In 2007, the USFS completed an analysis of its public recreation sites. The analysis examined existing demand for the recreational resources, the need to update or change the sites to meet the demand (including closing some sites that no longer have demand), and the agency's ability to make the recommended changes. The analysis concluded with a program of work to reduce the deferred maintenance on the sites by 20% in the ensuing five years. The work will include everything from improvements at some sites to closure of others.

Scheduled/projected completion: This project is ongoing.

Scenic Vista Management Plan

The purpose of the Scenic Vista Programmatic Management Plan for Yosemite National Park is to develop a systematic program to protect and restore Yosemite's important viewpoints, vistas, and the natural processes that created them. This plan will fulfill the park's obligations under the National

Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA). The program will replace the park's current case by case approach and will enable and guide management actions by the NPS to:

- Develop an objective process to determine what methods would be used to manage vistas
- Preserve the historic and cultural settings in which the viewpoints were established
- Restore and maintain scenic vistas through appropriate vegetation management actions such as trimming or removing trees and clearing brush
- Accomplish scenic vista management, whenever practicable, by restoring natural species composition, structure, and function to systems, preferably by using traditional American Indian vegetation management practices, including fire

The Finding of No Significant Impact was signed in 2010 and associated actions are being implemented in locations outside of the Merced River corridor. The Merced River Plan will be the compliance document for scenic vista management actions to be taken within the river corridor.

Special Use Permit Issuance for Events and Activities

Within Yosemite National Park, special use permits are required for first amendment activities, special events, business operations, public assembly, sale, or distribution of printed material, or construction. Approximately 50 special use permits are issued annually for special events (often weddings) at Tenaya Lake.

Tioga Road Rehabilitations

The project proposes restoration of the roadbed by repaving, restoring ditches and shoulders, addressing turnouts, and replacing undersized or failing culverts to facilitate drainage. Specifically proposed in this plan:

- Historic stone culvert headwalls would be maintained or carefully removed and reconstructed.
- In addition to culverts, drainage ditches along this segment would be reconstructed to help facilitate proper drainage of the roadway.
- Some undesignated turnouts would be restored to natural conditions. These areas are either considered unsafe due to their inadequate size, sight distance, and/or location partially on and off the roadway; or they incur damage to nearby natural resources.
- Designated, formal parking areas would be retained and repaved. Additional parking areas would be delineated and formalized with paving.
- •Selective thinning of roadside trees would occur to improve sight distance and prevent root penetration into the roadway, which is currently causing upheavals in the shoulder and paved roadway surface. Thinning of trees would also reduce ice build-up on the road, and reduce snow plow damage.

A Finding of No Significant Impacts is anticipated in 2012. Implementation will be phased over 5 or more years.

Tuolumne Wild and Scenic River Comprehensive Management Plan

The NPS is preparing a comprehensive management plan for the segments of the Tuolumne River corridor within Yosemite National Park. When completed, this document will guide the future management of the river to ensure the protection and enhancement of the river's Outstandingly Remarkable Values and its free-flowing condition. The plan will also determine more specifically the programs and activities needed to meet river protection goals in Tuolumne Meadows and throughout the river corridor.

To achieve these objectives, the Tuolumne River plan will:

- review, and if necessary revise, the existing boundaries and segment classifications of the Wild and Scenic River corridor;
- establish management zoning in the river corridor to provide for a spectrum of interrelated resource conditions and visitor experiences;
- establish clearly stated long-term goals (desired conditions) for resource protection and visitor experiences, and identify the indicators and standards for a monitoring program that will ensure these goals are met and maintained over time;
- address user capacity by identifying the appropriate kinds and levels of use that protect river values while achieving and maintaining the desired conditions; and
- identify specific programs and facilities needed to implement the long-term goals for the Tuolumne Meadows area established by the Tuolumne River plan.

The Tuolumne is rich in what the Wild and Scenic Rivers Act calls outstandingly remarkable values. It is home to a vast range of ecologic and sociocultural values, including:

- intact ecosystems providing habitat for a remarkable diversity of species;
- some of the most extensive subalpine meadow and riparian communities in the Sierra Nevada;
- exceptionally well preserved evidence of glacial processes;
- regionally significant archeological evidence of prehistoric travel, trade, and settlement;
- Prehistoric resources important for maintaining cultural traditions of American Indian people;
- Magnificent scenery;
- Outstanding opportunities for a diversity of recreational experiences; and
- Invaluable opportunities to examine natural and cultural resources with high research value.

A draft environmental impact statement is anticipated in Fall/Winter 2012.

Vegetation Management Plan

The Yosemite National Park Vegetation Management Plan (NPS 1997a) establishes guidance for vegetation management issues. The purpose of the plan is to define objectives, techniques and strategies for managing vegetation while preserving scenic resources and providing resource and visitor protection. This plan also contains sections pertaining to manipulating roadside vegetation including providing clearance for large vehicles (e.g., snow loading equipment), hazard tree safety, road user safety, and wildlife protection.

One objective of the Vegetative Management Plan is to provide for visitor recreation, access, enjoyment, safety, and understanding of park plant communities and ecosystems (NPS 1997a). This can be accomplished by managing for and allowing only those types and levels of public, administrative, or consumptive uses that do not impair park native plant communities or threatened, endangered, candidate, or sensitive species. Ecologically sensitive areas are to be protected to prohibit impairment, with development and use directed to environments least vulnerable to degradation or where such use will not impact the viability of these areas and their scenic and scientific values (NPS 1997a).

One solution involves limitation of access to sensitive resources, which includes:

- Identify and eliminate those human activities, including management actions that cause damage and affect resource integrity.
- In non-wilderness areas, construct fences, boardwalks, hardened trails, and other structures where necessary to protect soils and vegetation from human-use impacts.
- Provide closures of areas undergoing restoration and revegetation from human activities until the rehabilitation has been fully accomplished.
- Develop and maintain signing and educational material to educate visitors and convince them of their obligation to help protect park resources.
- Roadside management: weeding by volunteers and employees who recognize certain species and use their own time to eradicate them.
- Revegetation is another important objective, and may include any or all of the following steps:
- Elimination of non-native plant species;
- Application of native or non-native (sterile rice straw) mulches;
- Seeding from locally gathered native plants appropriate to the site;
- Revegetation with plants salvaged from the site prior to physical restoration or from adjacent areas when these are available;
- Planting with propagated plants that have been produced from plant materials previously collected from the site;
- Installation of temporary or permanent area closures to allow plant establishment and protection from potential human-caused disturbances.

- Revegetated sites should be monitored and maintained for a number of years following replanting (NPS 1997a). Maintenance prevents the establishment of non-native plants and monitoring will help assess the effectiveness of various planting techniques and the feasibility of transplanting various plant species.

On-going.

Yosemite Environmental Education Campus

NatureBridge, an NPS nonprofit park partner, has provided environmental education programs in Yosemite National Park since 1971 at the NPS facility at Crane Flat. Most of the campus structures and utilities are more than 60 years old, energy inefficient, and difficult to retrofit to achieve modern standards for health, safety, and accessibility. In addition, the facility can accommodate only a fraction of the students in the program; the remainder must be based elsewhere in the park, in expensive commercial lodging. To address these issues, NatureBridge and the NPS are considering options to provide better facilities by redeveloping the existing campus (Crane Flat) or constructing a new education center at a different location (and restoring the Crane Flat campus to natural conditions). The draft environmental impact statement (EIS), released in May 2009, proposes to develop a new educational facility at Henness Ridge, near Yosemite West, and to restore Crane Flat to natural conditions and provide habitat for sensitive species.

Scheduled/projected completion: The Record of Decision was signed by the Regional Director on April 2, 2010.

The purpose of the proposed action is to:

- Promote the development of future stewards for the environment and our national parks
- Provide an environmental education campus location and program that better serves the combined missions of the Yosemite Institute and Yosemite National Park
- Provide a safe and universally accessible campus facility that meets modern health and safety standards
- Increase overall program student capacity and reduce reliance upon commercial lodging (i.e., reduce the number of students currently staying overnight in Yosemite Valley) to make the program more affordable and more accessible to all children.
- Provide a location conducive to multi-day experiential programs that complement California state educational standards and offer opportunities for research and study of the natural world
- Provide a campus facility that meets or exceeds national Leadership in Energy and Environmental Design (LEED) standards
- Create a campus design that better encourages responsible interaction with the environment
- Establish an ecologically sensitive campus that protects park resources and provides exemplary environmental educational learning opportunities

The Final EIS for this project was released in January 2010 followed by a Record of Decision in spring of 2010.

Restoration of the Mariposa Grove Ecosystem

Nearly 150 years after U.S. Congress passed landmark legislation preserving both the Mariposa Grove of Giant Sequoias and Yosemite Valley, comprehensive actions are needed to ensure that the Mariposa Grove ecosystem continues to thrive and provide inspiration and enjoyment for future generations. The primary goals of this project are to restore degraded habitat and natural processes critical to the long-term health of the Grove and improve the overall experience for visitors. The park began public scoping for this project in fall of 2011. A Draft EIS is anticipated for public release prior to the Record of Decision for the Merced River Plan.

REASONABLY FORESEEABLE FUTURE

Changing demographics of visitors in Yosemite

TRP- Americans, and especially Westerners, have expressed an increasing interest in recreation in the last twenty years (all kinds of recreation, but especially bird watching, hiking, and walking (Cordell 2004)). In Yosemite, visitors have expressed an interest in kayaking the Tuolumne River. Other visitors already hang-glide from Glacier Point and pursue other activities not ordinarily found in other national parks. Between 28 and 55% of visitors take a hike while in Yosemite, and 23 to 42% observe wildlife, but only 3 to 6% participate in rock climbing (citation needed here). These percentages change over time, bringing associated changes in demand to park resources and managers.

Concessioner Prospectus

The National Park Service (NPS) has continued the contract with DNC Parks and Resorts at Yosemite, Inc. to provide visitor services within the park from October 1, 2011 through January 31, 2015. The previous contract extension expires on September 30, 2011. The park is continuing the process of developing a new prospectus for visitor services. The continuation of the contact was deemed necessary to ensure that there is no disruption of visitor services while the park works on several planning efforts. The provisions of the current contract will not change. DNC Parks and Resorts at Yosemite, Inc. will continue to provide existing services from October 1, 2011 through January 31, 2015 or until such time as a new contract regarding the visitor services provided under the contract is awarded, whichever comes first.

Curry Village Rehabilitation of Historic Cabins with Bath Structures

This project will address a rehabilitation program for the twenty-six (26) guest cabins with baths (24 duplex and 2 quadplex Bungalows, or WIBs) that are still being used for guest accommodations on the western side of Curry Village just north of the rockfall hazard zone. Built from 1918 to 1922 by Curry Company, these 26 bungalow structures have deteriorating and failing foundations. The structures

were originally built using rocks as piers where practical and most often with wood piers set directly on the ground. Perpetual shade of the southern cliffs, the flow of water off Glacier Point cliffs, and seasonally deposited silt on the upslope side are rotting out many softwood piers, rim joists, sub and finish floor, and exterior vertical base sheathing. This project is currently in the design stage and would be implemented in a multi-year phased project.

Yosemite Wilderness Stewardship Plan

The National Park Service will be updating the 1989 Yosemite National Park Wilderness Management Plan. The objective of updating the plan is to provide guidance to park operations for the successful management of Yosemite's designated wilderness, which comprises over 95% of the park. The plan will address land management issues within the wilderness including visitor use, vegetation associations, air resources, noise issues, watershed, soils, cultural landscapes, and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite National Park.

The development of the EIS update to the plan is anticipated to begin in 2013.

APPENDIX C

MITIGATION MEASURES

APPENDIX C: MITIGATION MEASURES

The National Park Service places a strong emphasis on avoidance, minimization, and mitigation of impacts. To help ensure that field activities protect natural, cultural, and social resources and the quality of the visitor experience, mitigation measures have been developed. The following section discusses mitigation measures that would occur prior to, during, and after construction of specific management actions.

Topic	Mitigation Measure	Responsibility
GENERAL CONSTRUCTION MANAGEMENT MEASURES		
MM-GCM-1 General Construction Management	All Contractor and subcontractor employees shall receive a brief orientation about working in Yosemite National Park and the El Portal Administrative Site prior to actually performing work. The orientation describes the efforts to be taken by the Contractor and subcontractor employees to protect the natural, cultural and physical resources of YNP while working on this and other projects. This orientation also describes mitigation and other environmental protection measures that must be adhered to at all times while in the Park. All contractor and subcontractor employees shall view a government provided orientation video to ensure each is fully aware of the natural and cultural resource protection and mitigation requirements of work at YNP, or in the El Portal Administrative Site. Government staff will provide the initial orientation. Subsequent on-going awareness orientation for new employees and when site conditions change shall be performed by contractor and integrated into construction operation procedures. The Contractor shall maintain a manifest tracking all contractor personnel, when they received their orientation training, and when they started work. Contractor personnel shall be field identifiable as having received their orientation training by means of a readily visible sticker on their hard hat. Prior to entry into the park, Contractor shall steam-clean heavy equipment to prevent importation of non-native plant species, tighten hydraulic fittings, ensure hydraulic hoses are in good condition and replace if damaged, and repair all petroleum leaks. Inspect the project to ensure that impacts stay within the parameters of the project area and do not escalate beyond the scope of the environmental assessment, as well as to ensure that the project conforms with all applicable permits or project conditions. Store all construction equipment within the delineated work limits. Contractor shall also confine work areas within creek channels to the smallest area necessary. If deemed necessary, demolition/construction work on weekends or federal government holidays may be authorized, with prior written approval of the Superintendent. Contractor shall remove all tools, equipment, barricades, signs, surplus materials, and rubbish from the project work limits upon project completion. Contractor shall repair any asphalt surfaces that are damaged due to work on the project to original condition. Contractors shall also remove all debris from the project site, including all visible concrete, timber, and metal pieces. The park shall develop a Communications Strategy Plan to alert necessary park and Concessioner employees, residents and visitors to pertinent elements of the construction work schedule. Contractor shall verify utility locations by contacting the Underground Services Alert prior to the start of construction.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
GENERAL CONSTRUCTION MANAGEMENT MEASURES (cont.)		
MM-GCM-1 General Construction Management (cont.)	The Contractor shall provide protective fencing enclosures around construction areas, including utility trenches to protect public health and safety. The NPS will apply for and comply with all federal and state permits required for construction-related activities. Contractor and NPS shall implement compliance monitoring to ensure that the project remains within the parameters of National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance documents. Develop an emergency notification plan that complies with park, federal, and state requirements and allows contractors to properly notify park, federal, and/or state personnel in the event of an emergency during construction activities. This plan will address notification requirements related to fire, personnel, and/or visitor injury, releases of spilled material, evacuation processes, etc. The emergency notification plan will be submitted to the park for review/approval prior to commencement of construction activities. Notify utilities prior to construction activities Identify locations of existing utilities prior to removal activity to prevent damage to utilities. The Underground Services Alert and NPS maintenance staff will be informed 72 hours prior to any ground disturbance. Construction-related activities will not proceed until the process of locating existing utilities is completed (water, wastewater, electric, communications, and telephone lines). An emergency response plan will be required of the contractor.	
SOILS AND GEOHAZARDS		
MM-GEO-1 Soils Management	The Contractor shall confine all earth moving activities to within the work limits as defined in the site plans. The displacement of soil or other materials outside the defined limits shall be approved by the contracting officer. Landscape: Land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area. Topsoil shall be salvaged and placed in a separate location from sub-soils and replaced on top of other soils as the trench is backfilled. The location for stock piling soils and other woody materials shall be approved by the contracting officer. Fungal Pathogens In Soil (Root Rot): Fungal pathogens that have negative impacts on oaks and conifers are present in certain areas in Yosemite Valley. Soil infected with these pathogens shall not be imported into areas that are free of the pathogens. If construction drawings indicate that infected soil is present in the work site, the following procedures must be followed: • Ensure that infected soil is stored within the construction zone. Should infected soils be stockpiled outside of the construction zone, ensure that stockpiles are placed outside of areas that do not have the fungal pathogen. Protect stockpiles of infected soil to prevent transport by wind, water, animal, or human traffic. • Clean equipment buckets and tires or hand tools used in areas containing fungal pathogens before moving to or working in unaffected areas. • Whenever possible, all stumps shall be removed from excavations and disposed of in a legal manner outside of the Yosemite National Park boundary.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
SOILS AND GEOHAZARDS (cont.)		
MM-GEO-1 Soils Management (cont.)	• Stump Treatment when stumps cannot be removed: The treatments following tree removal must be universal throughout the park to avoid inadvertently spreading infection. Eradication of the disease is not possible, but its' spread can be managed. - Conifers: Treat all stumps (>6 inches in diameter in recreational use areas, >12 inches diameter in undeveloped areas) with Sporax within a few days of felling the tree. If a stump is ground, it still must be treated with Sporax, and then covered with soil. If the stump is removed, no chemical treatment is required. Remove all of the root material >3 inches in diameter. Standing trees that have been dead for less than one year must have stumps treated with Sporax once they are removed. - Deciduous: Oaks should be left whenever possible, if the tree must be cut, the entire stump and root system must be removed from the Park. - Disturb no more than 15 percent of the roots for any given tree. - Do not over-water oak trees. - Do not compact soil within drip lines of the tree. • Treatment of Infected Soils: Remove root material by sifting or sorting soil before backfilling. - Treatment of soils in an annosus zone. Only infected HA areas need to be treated for removal of root material. Standard specification for roots to be removed from disturbed soil: >3 inches diameter or >20 inches in length. Remove ALL stumps from excavation. - Do not move soil from infected areas. - Topsoil shall be salvaged and reused in the same place from which it was excavated. If the soil is to be windrowed and used later, it should be sorted for root chunks prior to storage. - Conserve and salvage topsoil for reuse. Materials will be reused to the maximum extent possible - All disturbed soil and fill slopes shall be stabilized in a manner consistent with the provisions of MM-HYD-1.	
HYDROLOGY AND WATER QUALITY		
MM-HYD-1 Stormwater Pollution Prevention Plan	Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that designates construction best management practices to be used to control the sources of fine sediment and to capture and filter it before entering the river. The SWPPP shall define the characteristics of the site, identify the type of construction that will be occurring, and describe the practices that will be implemented to control erosion and the release of pollutants in stormwater. At a minimum, the SWPPP shall address the following, as applicable:	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-1 Stormwater Pollution Prevention Plan (cont.)	***Stabilization Practices*** • The stabilization practices to be implemented shall specify the intended stabilization practices, which may include one or more of the following: temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and/or grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Unless otherwise directed by the Contracting Officer for the reasons below (i.e., unsuitable conditions or no activity for less than 21 days), stabilization practices shall be initiated as soon as practicable, in any portion of the site where construction activities have temporarily or permanently ceased, but no more than 14 calendar days after the activities cease. • Unsuitable Conditions - Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable. • No Activity for Less Than 21 Days - Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased. ***Structural Practices*** • The Contractor shall implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Location and details of installation of structural practices shall be depicted on the construction drawings. ***Silt Fences*** • The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings or as needed based on Contractor operations. Final removal of silt fence barriers shall be upon approval by the Contracting Officer. • Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6-inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the COR.	

<table>
<tr><th>Topic</th><th>Mitigation Measure</th><th>Responsibility</th></tr>
<tr><td colspan="3">HYDROLOGY AND WATER QUALITY (cont.)</td></tr>
<tr><td>MM-HYD-1
Stormwater Pollution Prevention Plan (cont.)</td><td>
Straw Bales
• Straw bales are not authorized for use in storm water control at YNP. They have the potential to introduce exotic species into the Park environment.
Diversion Dikes
• Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as shown on the drawings or as needed based on Contractor operations. Location of diversion dikes shall be fully coordinated with cultural and natural environmental protection requirements described in Section 01355, Natural, Cultural, and Physical Resources Protection.
Filter Fabric
• The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments that are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:
FILTER FABRIC FOR SILT SCREEN FENCE
<table>
<tr><th>Physical Property</th><th>Test Procedure</th><th>Strength Requirement</th></tr>
<tr><td>Grab Tensile</td><td>ASTM D 4632</td><td>100 lbs. min.</td></tr>
<tr><td>Elongation (%)</td><td></td><td>30 % max.</td></tr>
<tr><td>Trapezoid Tear</td><td>ASTM D 4533</td><td>55 lbs. min.</td></tr>
<tr><td>Permittivity</td><td>ASTM D 4491</td><td>0.2 sec^{-1}</td></tr>
<tr><td>AOS (U.S. Std Sieve)</td><td>ASTM D 4751</td><td>20-100</td></tr>
</table>
Silt Fence Stakes and Posts
• The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when hardwood is used and 4 inches by 4 inches when softwood is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.
Identification Storage and Handling
• Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.
</td><td></td></tr>
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Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-1 Stormwater Pollution Prevention Plan (cont.)	***Maintenance*** • The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures. • Silt fences shall be inspected in accordance with the below paragraph, Inspections. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed with approval of COR. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. • Diversion dikes shall be inspected in accordance with the below paragraph, Inspections. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade. ***Inspections*** • The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every 7 calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month. • Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking. • For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the COR within 24 hours of the inspection as a part of the Contractor's daily CQC Report. A copy of the inspection report shall be maintained on the job site.	
MM-HYD-2 Non-Hazardous Liquid Waste Management	Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related wastewater off Government property in accordance with all Federal, State, Regional and Local laws and regulations. Water contaminated with silt, grout, or other construction by-product must be pumped to a holding tank. Location of the holding tank will be proposed by Contractor and approved by Contracting Officer.	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-3 Hazardous Materials and Wastes	• Identify potentially hazardous substances to be used on the job site. • Identify handling procedures to ensure that hazardous substances are not released into the air, water, or ground. • Comply with Federal, State, and local laws and regulations for storage, handling, and disposal of these materials. • Storage of hazardous or flammable chemicals in the staging area or elsewhere on the site is prohibited except as approved by the Contracting Officer. • Hazardous materials shall not be discarded into the jobsite debris or waste-disposal facilities. • Empty containers shall be removed from the site and disposed of in a manner prescribed by law. • Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. • A copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time is to be maintained on site and submitted to the Contracting Officer. • Before new hazardous materials are brought on site or removed from the site, the MSDS file shall be updated and submitted to the Contracting Officer.	Contractor
MM-HYD-4 Spill Prevention and Response Plan (SPRP)	The California Regional Water Quality Control Board has issued a Cleanup and Abatement Order and Time Schedule Order to Yosemite National Park ordering that no sewage spills occur. The Contractor shall be required to follow the requirements of the Order and shall prepare a Spill Prevention and Response Plan and take appropriate spill prevention measures during all phases of the work. The California Regional Water Quality Control Board requires a minimum of 10 days to review the SPRP. All recommendations by the Board will be implemented at no additional cost to the NPS. The primary purpose of the SPRP is to prevent sewage spills from occurring by proper planning and protection of the project area, and then to respond to any sewage spills that may occur during the course of this project including appropriate notification of staff. The Plan will be general in nature and typical to all phases of the work with site specific plans required for each area involving trenching or any work with the possibility of accessing the existing system. The sewer lines are located throughout Yosemite Valley and in close proximity to waterways and stream channels such that spilled sewage could possibly reach the Merced River. The SPRP is structured in two parts – first a Spill Prevention Plan and then a Spill Response Plan. The Spill Prevention Plan (SPP) includes evaluation of specific conditions, set-up of containment for actual construction work as well as for bypass pumping. Sewer bypasses must be constructed to tie existing lines into the new system and to tie the new system into the existing system. The Spill Response Plan (SRP) includes the initial response to stop and contain a spill, notification of staff, clean-up, and follow-up documentation. The SPP and the SRP together comprise the entire SPRP. A template of a plan follows at the end of this Section. An electronic version of this template will be provided to the successful bidder. All Contractor employees are required to be trained in the Spill Prevention Control in accordance with this SPRP.	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-5 Hazardous Materials Spill Prevention and Response Plan	Contractor shall provide a Hazardous Materials Spill Prevention and Response Plan to address spill prevention and response measures for hazardous substances used on site, including fuels. Prior to the start of work, the Contractor shall submit a plan that complies with YNP, Federal and State requirements and allows contractors to properly notify officials in the event of an emergency occurring during construction activities. YNP requirements include, and the plan shall state, at a minimum: • During non-work operations, stationary equipment shall be parked over specially prepared containment pads designed to trap any leaking oil, fuel, or hydraulic fluids. • Inspect construction site daily for proper storage of hazardous materials, proper parking of equipment on containment pads, and for hydraulic and oil leaks of equipment, tighten hoses, and ensure they are in good condition. • Routine oiling and lubrication shall be conducted in areas with secondary containment using Best Management Practices (BMPs) at all times. Refueling of equipment in wetlands or stream channel areas is not allowed at any time. • Contractor shall maintain secondary containment for all equipment operating with fluids (such as drilling) or when direct discharge of leakage, spills, or other source of construction or equipment fluids can flow directly to any streambed, whether flowing with water or dry. Containment shall be designed and installed so as to prevent accidental spills into streambeds in the event of mechanical failure or hose breakage. • Contractor shall maintain spill response materials on the project site when using heavy equipment to ensure rapid response to small spills. These materials shall include absorbent pads, booms, or other materials as appropriate to contain oil, hydraulic fluid, solvents, and hazardous material spills. A list of the spill response materials to be kept on site shall be submitted to the Contracting Officer. • Contractor shall provide names and phone numbers of appropriate contractor's personnel to be contacted at any time (24 hours per day) regarding accidental release of hazardous substances to air, soil or water. This list shall be submitted to the Contracting Officer and a copy visibly displayed in work areas on site. • Contractor shall have the Contracting Officer's and other appropriate Government emergency numbers posted and shall immediately notify the Contracting Officer or other Government representative on any accidental release of hazardous substances to air, soil or water. • Hazardous or flammable chemicals shall be prohibited from storage in the staging area, except for those substances identified in the Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan. Hazardous waste materials shall be immediately removed from project site in approved containers. • Comply with all applicable regulations and policies during the removal and remediation of asbestos, lead paint, and polychlorinated biphenyls.	Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS		
MM-VEG-1 Protection from Exotic Plant Species:	The park and contractor shall undertake measures to prevent the introduction of exotic species in the project area and staging areas. All earth moving equipment must enter the Park free of dirt, dust, mud, seeds, or other potential contaminant. Equipment exhibiting any dirt or other material attached to frame, tires, wheels, or other parts shall be thoroughly cleaned by the Contractor before entering the Park. All equipment will be directed to the El Portal Maintenance Facility for inspection prior to commencing work. Areas inspected shall include, but not be limited to, tracks, track guard/housings, belly pans/under covers, buckets, rippers, and other attachments. Equipment that does not pass inspection will be turned around to the nearest cleaning facility outside the park. If vehicles are unable to drive to El Portal due to size or load restrictions, vehicles will be inspected at a mutually agreed site by the Contracting Officer prior to entering the Park. The Contractor shall notify the Construction manager at least two work days (not including weekends) prior to bringing any equipment into the Park. Equipment found to have entered the Park with potential contaminants will be removed from the Park at the direction of the Contracting Officer at Contractor's sole expense. Contractor shall minimize ground disturbance to the greatest extent possible. The contractor shall get approval in writing from the Contracting Officer for fill material that must be used in a way or stored in a location not clearly specified in the contract. Fill materials used within the top 12 inches of finished grade are required to be free of exotic and noxious weed species and shall have the source locations approved by the Contracting Officer. The Contractor shall submit to the Contracting Officer a list of proposed sources for imported fill materials requiring certification 30 calendar days in advance of importing material. The presence of noxious weed species is grounds for rejection of the source. If exotic weed species are found or suspected, the Contractor may be required to strip the top 12 inches of source material and only import sub-surface material and/or sterilize the material, at the Contracting Officer's discretion. The presence of the following particularly noxious weed species are grounds for rejection of the source: spotted knapweed, yellow star-thistle, perennial pepperweed, broom species, and other species on the California State List of Noxious Weeds. If spraying is required, the Contractor shall provide a licensed operator to spray according to applicable state regulations and park management guidelines (e.g., the Invasive Species Management Plan). The Contractor shall not spray any herbicides until approved in writing by the Contracting Officer. Drain and flush all pumps, tanks, live wells, buckets and other containers that might carry water contaminated with exotic plants and animals, such as the zebra mussel, prior to bringing equipment into the park. Thoroughly wash all hauling tanks and equipment using a hard spray from a garden hose. If equipment was used in infested waters, use the following steps to clean the equipment: • Wash with hot water (140 F or 40 C) or a high pressure washer (250 pounds per square inch). Remove all aquatic weeds -- they can carry zebra mussels. • Disinfect equipment. Recent research shows that disinfection of nets and equipment with benzalkonium chloride at typical treatment rates (10 milligrams per liter for 24 hours, 100 milligrams per liter for 3 hours, or 250 milligrams per liter for 15 minutes) will effectively eliminate most exotic animals. Two other commonly used disinfectants, calcium hypochlorite and iodine, are ineffective against zebra mussels.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-1 Protection from Exotic Plant Species (cont.)	• Adult zebra mussels can live more than a week out of water in moist, shaded areas. Dry pumps, nets and other equipment used in infested waters in the sun for two to four days after cleaning. If adult mussels are present, dry equipment for two weeks.	
MM-VEG-2 Vegetation Inventory and Assessment	Plant Condition Inventory: The Contractor and the Contracting Officer or designated representative, shall perform an on-site inventory of trees and other overall vegetation features within or near to the work limits. A print of the contract drawings showing tree locations and a photo record will be used to note condition of trees and vegetation. This annotated drawing will be retained by the Contracting Officer for use during the final walk-through and tree/vegetation assessment. This walk through shall be a part of the project closeout requirements (see Section 01770, Project Closeout). On-site inventory shall be scheduled in coordination with the pre-construction conference. Access to work sites requiring travel through undeveloped areas outside the work limits must be approved by the contracting officer. Provide temporary barriers (e.g., orange construction fence) to protect existing trees, plants and critical root zones that are designated to remain, but are: (1) within the construction limits; 2) on or just outside the construction limits; (3) within the clearing limits (i.e., the zone extending 5 feet beyond the staked construction limits); or (4) on, or just outside the clearing limit line. Barriers shall be in place before construction begins. Trees, shrubs, vines, grasses, and other vegetative features indicated and defined on the Drawings to be preserved shall be clearly identified by marking, fencing, or any other approved techniques. The Contractor shall restore vegetative features damaged or destroyed during construction operations outside the limits of the approved work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy resources including trees, shrubs, vines, grasses, topsoil, and landforms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Removal of trees will be performed by YNP in advance of Contractor's work. Should it be determined during the course of work that additional trees or tree roots require removal, Contractor shall notify the Contracting Officer who will coordinate an inspection and determination by the appropriate authorities whether to remove the tree or not. After tree removal, large roots may remain in the ground. Contractor shall be responsible for carefully removing in-ground tree roots of removed trees to permit excavation, drilling, or other ground penetrating construction activities. During tree root removal, do not use backhoes, chains, or other equipment in a manner that will harm roots of adjacent trees. Minimize disturbance to tree trunks and root zones to prevent damage to trees. Adjust trenches and other excavations to keep them beyond the drip line wherever possible. Attempt to maintain the following minimum clearances between the edges of tree trunks and excavation: • for trees more than 30-inch-in-diameter - 10 feet	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-2 Vegetation Inventory and Assessment (cont.)	• for trees between 15-inch and 30-inch-in-diameter - 8 feet • for trees less than 15-inch-in-diameter - 5 feet Adjust the survey line, as necessary to maintain required clearances. Notify the Contracting Officer of any proposed trenches or other excavations within the drip line of trees. Steps to Mitigate Damage to Roots Due to Excavation: Take steps (as called for below) to mitigate damage to tree roots due to excavation, wherever the following circumstances apply: • Wherever excavation must take place within the drip line of oak trees regardless of diameter. • Wherever excavation must take place within the drip line of trees other than oaks, for all trees 12 inches or larger in diameter. Trees which are anticipated to meet these criteria and therefore require steps to mitigate damage to roots due to excavation are shown on the drawings. Adjustments in trench alignment or other factors may result in variations in which trees are affected. The Contractor shall accommodate these variations at no additional expense to the Government. Following are the steps which are required to mitigate damage to roots due to excavation: • Excavate carefully where tree roots might be encountered. Where roots 2 inches and larger are encountered, hand excavate as required to prevent damage to roots. Tunnel under roots to be saved, hand excavating as necessary. • Do not cut roots over 2-inch-in-diameter without approval of Contracting Officer. • Cleanly saw-cut roots between 1-inch and 2-inch-in-diameter where they interfere with work; do not cut roots except as necessary. Roots between 1-inch and 2-inch-in-diameter which must be cut shall be cleanly saw-cut near the edge of trench closest to the tree to prevent roots from being dislodged from soil by equipment. • Avoid soil compaction within plant root zones with heavy equipment and vehicles within the project work limits. • Do not cut wheels or make sharp turns with wheeled or tracked equipment in root zones. • Do not pile excavated soil against tree trunks. • Do not mechanically compact soils in undeveloped areas except to meet minimum compaction requirements as approved by the contracting officer. • Maintain original soil topography in plant root zones whenever possible. Preserve tree snags where feasible as potential bat or bird habitat.	

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-3 Plant Appraisal	If the Contractor destroys or injures trees and vegetation designated for protection or outside the work limits, the Contractor will be assessed damages prior to final progress payment. Replacement costs for damaged vegetation will be computed according to the method described in the International Society of Arborculture's 1992 Guide for Plant Appraisal. This method is based on the cost of the largest commonly available tree or shrub, with modifications based on species value, condition, and location. A trained arborist or professional plant appraiser from the California region will be hired by the NPS to make the damage appraisal. The arborist's fees will be included in the damage assessment. This damage appraisal process will be triggered by any of the following types of damage to vegetation outside the work limits or unauthorized disturbance of vegetation within the work limits. • Removal of any tree or shrub. • Pruning or removal of more than 30 percent of a tree or shrub canopy. • Removal or fracture of any limb or trunk that is one of the major structural entities of the damaged plant. • Removal or fracture of any limb greater than 12 inches in diameter. • Bark damage or removal around more than 30 percent of the trunk circumference. • Trenching or soil disturbance within the critical root zone that is deeper than 1-foot unless shown on the Drawings. If the damaged vegetation is protected under the Endangered Species Act or other special legislation, additional penalties may be assessed as per consultation with the U.S. Fish & Wildlife Service. Pruning or removal of vegetation shall be supervised by Contracting Officer. The designated personnel may designate plant species for salvage. When authorized and supervised by the Contracting Officer, the Contractor is exempted from any penalties that might be assessed due to damage to vegetation. • Acceptable disturbance to roots is limited to 15 percent of the area under the drip line being either cut or filled. Any tree with more than 50 percent of its roots disturbed should be removed during construction at the direction of the Contracting Officer. • Wounds occurring from construction activity may be possible entry sites for disease spores. If a tree is accidentally injured during construction, it may need to be removed at the direction of the Contracting Officer. Trench alignments or other factors may result in variations in which trees are affected. The Contractor shall accommodate these variations at no additional expense to the Government. Minor cuts and damaged areas shall be assessed by the Contracting Officer. Repair to the plant will be at the recommendation of the YNP personnel and approval of the Contracting Officer.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-4 Wetlands Delineation	Delineate wetlands and apply protection measures during construction. Wetlands shall be delineated by qualified National Park Service staff or certified wetland specialists and clearly marked prior to work. Perform activities in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.	Yosemite National Park; Contractor
MM-VEG-5 Wetlands Regulation	The Contractor shall adhere at all times to the conditions of U.S. Army Corps of Engineers Nationwide Permit No. 33, Temporary Construction, Access and Dewatering, with the following conditions as a minimum: • All work will be subject to the Standard and Technical Conditions of the Certification of the California Regional Water Quality Control Board, a copy which will be provided to the Contractor. • Work in streambeds is to be performed in periods of low water conditions. Contractor shall monitor stream flow conditions and weather forecasts at all times during the course of the work. During thunderstorms or other intense rain conditions, streambeds at Yosemite can fill rapidly. Re-grade and restore disturbed areas to preexisting contours to maintain drainage patterns.	Contractor
MM-VEG-6 Wetlands Protection	The Contractor shall fence construction areas adjacent to aquatic habitats to prohibit the movement of aquatic species into the construction area and to control siltation and disturbance in aquatic habitats. The Contractor shall salvage and reuse wetland soils as fill to the maximum extent possible. The Contractor shall use trench plugs where designated on the drawings in wetland areas to prevent changes to natural flow patterns. During dewatering, intakes shall be completely screened with wire mesh not larger than 5 millimeters to prevent aquatic species from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Access routes to and through work locations in the meadows and wetlands shall be planked with 1 1/8" plywood, stabilization mats or other method approved by the contracting officer.	Yosemite National Park, Project Manager; Contractor
MM-VEG-7 Monitoring	Ongoing monitoring undertaken by Yosemite's interdisciplinary Visitor Use and Impacts Monitoring Program regularly assesses conditions in meadows and along riverbanks, providing important information on the success of restoration efforts. In addition, the park performs regular monitoring for invasive plants, stock use impacts, wildlife abundance and diversity, and visitor experience. To evaluate the success of particular restoration actions, monitoring plans will be implemented specific to each restoration project. Geophysical and biological parameters will be monitored over time to determine restoration success and recovery rates. Pre and post-restoration vegetation and soil sampling and photo points are examples of monitoring to measure project success.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
WILDLIFE AND SPECIAL STATUS SPECIES		
MM-WL-1 Fish and Wildlife Protection	The Contractor and Contractor's employees shall not feed any animals within Yosemite National Park. The Contractor shall make all reasonable efforts in accordance with the plans and specifications for the protection of threatened or endangered or candidate species including their habitat in accordance with Federal, State, Regional, and local laws and regulations. Contractor shall schedule construction activities with seasonal consideration of wildlife lifecycles to minimize impacts during sensitive periods (i.e., after bird nesting seasons, when bats are neither hibernating nor have young, etc); limit the effects of light and noise on adjacent habitat through controls on construction equipment; and provide adequate education and enforcement to limit construction worker activities that are destructive to wildlife and habitats. Contractor shall maintain routes of escape from excavated pits and trenches for animals that might fall in. During construction activities, Contractor personnel shall maintain vigilance for animals caught in excavations and take appropriate action to free them. • Excavation pits shall have a ramp or incline at either end to allow for human and wildlife escape. • Each morning prior to commencing work activities, Contractor shall inspect construction site for trapped wildlife in excavation pits and carefully remove. If necessary, contact the Contracting Officer for assistance.	Yosemite National Park; Contractor
MM-WL-2 Bear Precautions	Bears may be present at any location within the YNP boundaries, including at the project site. The Contractor shall incorporate the following precautions in all activities within the YNP boundary. All food, toiletries, and scented items (i.e., bug spray) shall be placed in bear boxes at the construction site provided by the Contractor. Bear boxes must remain closed and latched at all times, unless items are being retrieved. No food, toiletries, or scented items shall be stored in vehicles or left out. • All food waste and food-related waste shall be disposed of in accordance with Non-Hazardous Solid Wastes requirements described elsewhere within this section. • All vehicles shall be checked daily to ensure that no items that may attract bears remain inside an unattended vehicle. Items that shall not be left in vehicles include canned food, drinks, soap, cosmetics, toiletries, domestic trash, recyclable food containers, ice chests, grocery bags, and unwashed items used for preparing or eating meals. • All windows and doors in recreational vehicles or trailers used for lodging or office space shall be closed and latched when not occupied. • The Contractor shall walk the job site at the end of each day and check for trash, food, and food-related items remaining at the site and dispose of the items in a bear-proof receptacle. • Proper food storage is important to the welfare of the Yosemite bear population and is required by law. The Contractor shall receive and all Contractor personnel shall read a brochure entitled, The Bears are not to Blame, provided by NPS staff as a courtesy. Contractor staff shall call the Save-a-Bear hotline (209) 372-0322 to report overflowing trash containers, improperly stored food, or bear sightings.	Contractor

Topic	Mitigation Measure	Responsibility
WILDLIFE AND SPECIAL STATUS SPECIES (cont.)		
MM-WL-3 Special Status Plant Species	If special-status plant species are identified within the construction disturbance zone, in particular within restoration and revegetation areas, avoid special-status plant populations to the extent feasible during construction activities. If it is not feasible for construction activities to avoid special status plant species, species conservation measures will be developed in coordination with Yosemite National Park natural resources staff. Measures may include salvage of special-status plants for use in revegetating disturbed areas and transplantation of special-status plants wherever possible using methods and monitoring identified in the revegetation plan, monitoring to ensure successful revegetation, protection of plantings, and replacement of unsuccessful plant materials if practicable.	Yosemite National Park; Contractor
MM-WL-4 Elderberry Longhorn Beetle Conservation Guidelines	Yosemite National Park and Contractor shall adhere to the "Conservation Guidelines for the Valley Elderberry Longhorn Beetle" (USFWS 1999) to avoid and minimize adverse impacts on the federally listed valley elderberry longhorn beetle. The guidelines specify avoidance and protection measures; transplantation specifications; requirements for planting additional seedlings, cuttings, and associated native species; monitoring; and reporting. Establish an estimated 1.53 acre conservation area at the Greenemeyer Sand Pit for elderberry shrubs and required additional species, pending specifications of U.S. Fish and Wildlife Service Biological Opinion for the final Merced River Plan/EIS.	Yosemite National Park; Contractor
MM-WL-5 Construction Timing	Schedule construction activities with seasonal consideration of wildlife lifecycles to minimize impacts during sensitive periods (i.e., after bird nesting seasons, when bats are neither hibernating nor have young, etc).	Yosemite National Park; Contractor
MM-WL-6 Bat Habitat Protection Guidelines	A qualified bat biologist will conduct surveys prior to construction to evaluate whether habitat that will be affected by the proposed action provide hibernacula or nursery colony roosting habitat for bat species. If bats are detected during reproduction or hibernation periods, disturbance of potential habitat will be delayed until the bats can be excluded from the area in a manner that does not adversely affect their survival or that of their young. If bats are detected during reproduction or hibernation periods, disturbance of potential habitat will be delayed until the bats can be excluded from the area in a manner that does not adversely affect their survival or that of their young. If surveys conducted immediately prior to construction do not reveal any bat species present within the project area, then the action will begin within three days to prevent the destruction of any bats that could move into the area after the survey.	Yosemite National Park; Contractor
MM-WL-7 Bird Habitat Protection Guidelines	Beginning in early spring, a park wildlife biologist will conduct bird surveys and review current owl reports to determine whether special status species are present and may be mating, nesting, or foraging in the project vicinity. If nesting birds are observed (e.g., discovered by workers) that are not special status species, the project manager will notify the park wildlife biologist who will recommend steps to avoid undesirable impacts to the nest or young.	Yosemite National Park, Project Manager

Topic	Mitigation Measure	Responsibility
LIGHTSCAPES		
MM-LITE-1 Yosemite Lighting Guidelines	All new sources of lighting, or substantial modifications to structures with existing sources of exterior lighting, shall conform to the standards set forth in the Yosemite Lighting Guidelines, available on the park's website at: http://www.nps.gov/yose/naturescience/dark-night-sky.htm.	Yosemite National Park; Contractor
MM-LITE-2 Night Lighting During Construction	Minimize night lighting during work. If night lighting is necessary, design lighting to be minimal, directed downward, and shielded.	Yosemite National Park; Contractor
SOUNDSCAPES		
MM-NOI-1 Construction Work Plan and Schedule	Contractor shall submit to the park for review and approval prior to commencement of construction a construction work plan/schedule that specifies the ways in which the contractor will minimize construction-related noise in noise-sensitive areas. At a minimum, the plan shall state the following: • Ensure that all construction equipment has functional exhaust muffler systems. • Use hydraulically or electrically powered construction equipment, when feasible. • Locate stationary noise sources as far from sensitive receptors as possible. • Limit the idling of motors except as necessary (e.g., concrete mixing trucks). • A construction schedule that minimizes impacts to adjacent noise-sensitive activities. • Engine braking ("jake" brakes) shall not be used in lodging, camping or residential areas. Engine brakes that are used shall be muffled. • Continuous noise abatement is required to prevent disturbance and nuisance to Park visitors and workers and to the occupants of adjacent premises and surrounding areas. • If the Contracting Officer determines excessive noise is emanating from the construction site, the Contractor may be required to provide sound barriers to deflect noise transmission from visitor areas or other areas impacted by noise. Construction noise shall be minimized through use of best available noise control techniques wherever feasible. Sound levels must be kept to a minimum at all times. Equipment and machinery shall not exceed 85 db when measured at 100 linear feet distance. Contractor shall use sound attenuated compressors and generators that comply with the most recent California Department of Transportation standards.	Contractor

<table>
<tr><th>Topic</th><th>Mitigation Measure</th><th>Responsibility</th></tr>
<tr><td colspan="3">SOUNDSCAPES (cont.)</td></tr>
<tr><td>MM-NOI-2
Noise Management Levels</td><td>
Contractor shall ensure that all construction equipment and practices adhere to the following noise limitations:
Repetitive and/or intermittent, high-level noise: Permitted only during Daytime.
Do not exceed the following dB(A) limitations at 50 feet:
<table>
<tr><th>Sound Level in dB(A)</th><th>Time Duration of Impact Noise</th></tr>
<tr><td>70</td><td>More than 12 minutes in any hour</td></tr>
<tr><td>80</td><td>More than 3 minutes in any hour</td></tr>
</table>
Maximum permissible construction equipment noise levels at 50 feet:
<table>
<tr><th>Earthmoving</th><th>dB(A)</th><th>Materials Handling</th><th>dB(A)</th></tr>
<tr><td>Front Loaders</td><td>75</td><td>Concrete Mixers</td><td>75</td></tr>
<tr><td>Backhoes</td><td>75</td><td>Concrete Pumps</td><td>75</td></tr>
<tr><td>Dozers</td><td>75</td><td>Cranes</td><td>75</td></tr>
<tr><td>Tractors</td><td>75</td><td>Derricks Impact</td><td>75</td></tr>
<tr><td>Scrapers</td><td>80</td><td>Pile Drivers</td><td>95</td></tr>
<tr><td>Graders</td><td>75</td><td>Jack Hammers</td><td>75</td></tr>
<tr><td>Trucks</td><td>75</td><td>Rock Drills</td><td>80</td></tr>
<tr><td>Pavers, Stationary</td><td>80</td><td>Pneumatic Tools</td><td>80</td></tr>
<tr><td>Pumps</td><td>75</td><td>Saws</td><td>75</td></tr>
<tr><td>Generators</td><td>75</td><td>Vibrators</td><td>75</td></tr>
<tr><td>Compressors</td><td>75</td><td></td><td></td></tr>
</table>
Ambient Noise:
Maximum noise levels (dB) for receiving noise area at property line shall be as follows:
<table>
<tr><td>Residential receiving area</td><td>Daytime: 65 dB</td></tr>
<tr><td></td><td>Nighttime: 45 dB</td></tr>
<tr><td>Commercial/Industrial receiving area</td><td>Daytime: 67 dB</td></tr>
<tr><td></td><td>Nighttime: 65 dB</td></tr>
</table>
In the event the existing local ambient noise level exceeds the maximum allowable receiving noise level (dB), the receiving noise level maximum for construction operations shall be adjusted as follows:
Residential receiving area: Maximum 3 additional dB above the local ambient as measured at property line.
Commercial/Industrial receiving area: Maximum 5 additional dB above the local ambient as measured at the property line.
</td><td>Contractor</td></tr>
</table>

Topic	Mitigation Measure	Responsibility
SOUNDSCAPES (cont.)		
MM-NOI-3 Field Quality Control	Contractor shall assess potential effects of construction noise on adjacent neighbors or facility occupants in accordance with ASTM E1686 and as follows: Ambient noise measurement: Measure at the property line at a height of at least four (4) feet above the immediate surrounding surface. Average the ambient noise level over a period of at least 15 minutes. Ambient noise measurement at urban sites: Conduct during morning peak traffic hour between 7 A.M. and 9 A.M. and afternoon peak traffic hour between 4 P.M. and 6 P.M. In addition, conduct a 24-hour measurement at the proposed project site to document the noise pattern throughout the day. Adjust and weight for seasonal and climatic variations. Monitor noise produced from construction operations in accordance with ASTM E1780.	Contractor
AIR QUALITY		
MM-AIR-1 Dust Abatement Program	The Yosemite National Park and/or a contractor (as appropriate) shall prepare, implement, and comply with a dust abatement program during construction. Measures include, but are not limited to, the following: • Water or apply soil stabilizers to disturbed areas; • When hauling dry materials, securely cover truck beds to prevent blowing dust or loss of debris; • Limit speeds to a maximum of 15 mph within construction areas. Slower speeds shall be maintained if necessary to reduce dust formation. • Minimize vegetation clearing; • Re-vegetate disturbed areas post construction; • At construction zone access points, prevent paved areas from accumulating mud, soils, and other organic materials.	Yosemite National Park; Contractor
MM-AIR-2 Equipment Exhaust Controls	The Yosemite National Park and/or a contractor (as appropriate) shall prepare, implement, and comply with equipment exhaust controls program during construction. Measures include, but are not limited to, the following: • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points; • Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM; • Require all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines; • Require all equipment operations to occur during daytime hours to minimize effects of local inversions; • Equipment operations shall be in accordance with all Federal and State air emission and performance laws and standards. • Vehicles or equipment with excessive emissions or discharging black smoke will be removed from operation immediately and may not be used until appropriate maintenance and repairs have corrected the emissions problem.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VISITOR EXPERIENCE		
MM-VEX-1 Non-Hazardous Solid Waste Management Measures	Waste, trash, and debris shall be controlled at all times and disposed in authorized containers in the Contractor's staging area. All sanitary waste (garbage) must be disposed of in approved, bear-proof disposal bins. Provide lockable, bear-proof dumpsters with lids for waste (garbage) storage. Lids shall be equipped with carabineers/heavy wire lid locks. Verify that dumpster lids are secure at close of work each day. Construction debris (rubbish) may be stored in unlidded dumpsters or construction debris truck/trailers and removed on a regular basis. Do not mingle sanitary or green waste with construction debris. All large, normally open top, waste bins or dumpsters shall be lidded and clearly marked "No Food or Trash". All construction personnel shall adhere to park regulations concerning food storage and refuse management. The Contractor shall designate an employee to police the work site daily for waste, wrappers, food packaging and the like. All waste shall be picked up and disposed of in lidded bear-proof dumpsters. Green waste shall be segregated from other non-green waste for processing at disposal site. Burying or burning of trash and debris on-site is not permitted. All un-used materials, trash, and debris shall be the property of the Contractor and shall be transported outside of the YNP boundary for disposal in accordance with law. Remove debris from permanently closed spaces prior to enclosing them. Properly secure trash during the workday and remove all trash from site at the end of each workday	Yosemite National Park; Contractor
MM-VEX-2 Scenic Resource Protection	Fence construction staging areas and construction activity areas to visually screen construction activity and materials. Consolidate construction equipment and materials to the staging areas at the end of each work day to limit the visual intrusion of construction equipment during nonwork hours.	Yosemite National Park; Contractor
TRANSPORTATION		
MM-TRA-1 Traffic Control Plan	Contractor shall prepare a Traffic Control Plan. This plan shall include but not be limited to the following: • Maps showing how any detour routes will be signed and controlled. • Submission of specific street closure and detour plans for each segment of the project no less than 3 weeks prior to beginning construction on any segment. • Description of how Contractor shall provide for the protection of pedestrians and bicyclists, and safe vehicle passage through the use of signs and flagpersons. In addition, address how access for emergency vehicles, chain-up areas and snow plow turn around areas, police, rangers, fire and disaster units shall be maintained at all times. • Show how any detour routes will be signed and controlled. Furnish and install all signs. Provide flagpersons as required. • Revise and update the Traffic Control Plan to reflect changes in the project schedule or sequence of work, as required.	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-1 Traffic Control Plan (cont.)	• Show measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud and dust transported onto paved public roads by vehicles or runoff. • Revise and update specific Traffic Control Plan to reflect changes in the project schedule as required, or to accommodate the traffic control plans of other projects concurrently under construction in the project vicinity or the Yosemite Valley. The YNP Project Manager will provide temporary traffic routing and control information from other on-going or planned projects that may affect the Contractor's Traffic Control Plan. The Contractor shall accommodate the information from these other traffic control plans as necessary and bring any conflicts to the attention of the COR immediately.	
MM-TRA-2 Road Closure Traffic Control and Detour Plans contents.	Prepare and submit specific Road Closure Traffic Control and Detour Plans for each area of the project not less than 3 weeks before beginning construction on any segment. Provide for the following: • Temporary closure of both lanes of traffic (subject to the requirements listed herein) shall be limited to periods of 20 minutes maximum. Requests for additional closure periods shall be submitted in writing to the Contracting Officer a minimum of 7 days prior to any planned road closures. • Single lane traffic diversions shall comply with the detail in "Traffic Control System for Two Lane Conventional State Highways" in California Department of Transportation Standard Specifications, Section 02201, Paragraph 1.1 D.	Contractor
MM-TRA-3 Traffic Control Devices	Traffic control devices shall be provided in sufficient quantities and types as required to provide safe and adequate traffic control. During hours of darkness, approved lights and/or flares shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic. Barricades shall be furnished and maintained along all open trenches in contact with traffic. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised. All traffic control devices shall be placed in accordance with the Manual of Traffic Controls and favorably reviewed Traffic Control Plan. Locations of devices shall be adjusted to suit the conditions and circumstances of each detour situation. In all cases, signs shall be placed to most effectively convey their messages to approaching traffic. Immediately after traffic control devices have been placed, the detour shall be test driven by the COR and Contractor's representative. Test drive shall include approach to the detour from each possible direction and traversing full length of each detour route. The Contractor shall adjust and revise all traffic control devices as determined to be required by test drive through and shall repeat test drive if determined necessary by the COR. The Contractor shall provide additional traffic control devices if required to maintain flow of traffic through construction operation.	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-3 Traffic Control Devices (cont.)	The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations. Traffic control devices shall remain in place at all times required to alert approaching traffic of upcoming hazards. After hazard has been removed, all traffic control devices shall be removed. Signs shall be removed or their messages covered.	
MM-TRA-4 Traffic Control Flaggers	The Contractor shall employ flaggers: • As required for each specific detour. • At all locations on a construction site where barricades and warning signs cannot control the moving traffic. Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed approximately 100 feet ahead of impact point.	Contractor
MM-TRA-4 Traffic Control Flaggers (cont.)	A warning sign shall be placed ahead of the flagger reading: "Flagger Ahead." The distance between the sign and the flagger should be based on the average traffic speed, allowing approximately 50 feet for each 10 miles per hour. During hours of darkness, flagger stations shall be illuminated such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall receive favorable review by the COR. The flagger shall be provided with and wear a red or orange warning garment when flagging. Flaggers shall be provided with approved hand signs and two way radios for communication. When flagging during hours of darkness, the flagger shall signal with a red light or flare and shall have a belt and suspender harness outside his garment fitted with reflectors or made from reflectorized cloth, unless the garment is well reflectorized in one of these ways.	
MM-TRA-5 Traffic Control and Maintenance	Traffic control and construction operations shall conform to the requirements of California Department of Transportation Standard Specifications, Section 12, except as modified herein. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones, flagmen, and other protective facilities and shall take all necessary precautions for the protection and for the convenience and safety of Park employees, public traffic, and Yosemite Concession Service operations. All such protective facilities and precautions to be taken shall conform to the U. S. Department of Transportation, Federal Highway Administration Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI-Traffic Control for Highway Construction and Maintenance Operations, latest edition, and as amended. Provide for the protection of pedestrians, bicyclists, and equestrians at all times.	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-5 Traffic Control and Maintenance (cont.)	Provide adequate, safe, non-skid bridging material over trenches, including shoring when trenching in pavement areas to handle all types of vehicular traffic. Whenever the Contractor's operations create a hazardous condition, the Contractor shall furnish flagpersons and guards as necessary to give adequate warning of any dangerous conditions to be encountered, and shall furnish, erect, and maintain such fences, barricades, lights, signs, and other devices as necessary to prevent accidents and avoid damage or injury to persons. Employ flagpersons to direct traffic as required to ensure safe vehicular travel. While on duty, flagpersons and guards shall be equipped with orange safety wearing apparel and a paddle-type signal, which shall be clean and in good repair. Provide two-way programmable radios to flagpersons if they are not in sight of each other at all times, or if necessary to ensure safe passage of vehicles. Provide, install, and maintain all signs, barricades, posts, guards and notices whenever a road or trail must be completely closed. Note that if posts are installed in ground, Contractor must contact USA-Dig and Archaeological Monitor for clearance to avoid culturally-sensitive areas. Remove or cover signs in conflict with traffic control requirements. Provide for passage and access of emergency vehicles, police, rangers, fire and disaster units at all times. Contractor assumes any and all liability for any damages resulting from failure to provide said access. Replace permanent pavement markings and traffic signs upon completion of each phase of work. At the end of each day's work or as soon as the work is completed remove all traffic control devices no longer needed to permit free and safe passage of traffic. Removal shall be in reverse order of installation. The traveled way shall not be obstructed with material, bedding, trench soil, nor with barricades or excavations. Excavations shall be backfilled, covered with steel traffic plate covers, or otherwise suitably protected so that traffic can pass unobstructed, as required, at night or over weekends and holidays. Temporary road repairs shall include road base and cold mix as specified to maintain a smooth, hard surface. The Contractor shall provide weekend and holiday road maintenance and repairs as necessary. All roads shall be kept open for public travel at all times unless specific written permission to close or restrict the use of a particular road is given by the COR. The Contractor is responsible for snow and ice control within the project limits utilizing NPS approved methods. Permission shall be granted upon approval of the specific Street Closure Traffic Control and Detour Plan for the intended closure. In the event that closing of a particular road is approved, it shall be the responsibility of the Contractor to notify the COR to reconfirm the hours and dates of the street closure and routes of detours at least 7 calendar days in advance of their occurrence, and again to notify the COR when the travel restriction is discontinued. No materials or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from that portion of the roadway to be opened for use by public traffic. No material or other obstructions shall be placed within 20 feet of fire hydrants, which shall at all times be readily accessible to the fire department, nor within 10 feet of United States mailboxes. Off-loading of materials at staging area shall be coordinated with the Contracting Officer as necessary.	

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-5 Traffic Control and Maintenance (cont.)	Traffic delays due to Contractor's activities and associated traffic control shall not exceed 20 minutes, unless prior written approval has been received from the Contracting Officer. Alternative access for Park visitors to all major features and facilities in the Park shall be maintained using the existing road system. Full access shall be provided year-round to the public for all operating Park facilities (hotels, campgrounds, bike paths, trails, stores, restaurants, museums, restrooms, etc.), unless the project includes closing, rehabilitating or reconstructing those facilities, except trail closures for equipment and material transfer or transport described in Section 01110, Summary of Work.	
HISTORIC STRUCTURES		
MM-HIST-1 Historic Road Character	To minimize the effect of new culvert construction on historic road character within the valley, the new walls should be stone (not veneer), constructed using compatible stone in a form and masonry pattern that is compatible with the nearby historic period masonry.	Yosemite National Park; Contractor
MM-HIST-2 Evaluation of The Ahwahnee Tennis Court	Prior to meadow restoration, the park shall, as per Section 106 of the NHPA, reevaluate the Ahwahnee tennis court for its continued integrity and eligibility as a contributor to the Ahwahnee Hotel Complex, and the extent to which the removal of the now defunct tennis court would impact the remaining contributors to the hotel complex. In the event that this resource is determined the maintain sufficient integrity to reflect its historic significance as a contributor, and that its loss would result in an adverse effect to the National Register hotel, in the event that avoidance is infeasible, the Park shall attempt resolution of adverse effects as per CFR § 800.6 establish appropriate mitigation of adverse effects through a Memorandum of Agreement between the Park and SHPO. Potential mitigation of impacts may include such actions as completing recordation through photographic and archival documentation, or providing for photographic interpretation of the site within the Ahwahnee Hotel.	Yosemite National Park; Contractor
MM-HIST-3 Evaluation of Revetment Removal Sites	Prior to any ground disturbing activities associated with revetment, further analysis and possible documentation at each site would be required in order to assess potential adverse effects to historic resources.	Yosemite National Park; Contractor
MM-HIST-4 Evaluation of Revetment Removal Sites	As per Section 106 of the NHPA, prior to construction or demolition activities, the Park shall survey the project area for potential impacts to historic buildings, structures, and districts within the project area of potential effect (APE). This will include a review of existing known historic resources for their continued integrity and eligibility for listing in the National Register, identification of currently unknown historic properties within the APE, determination of potential adverse effects and resolution of those effects in compliance with 36 CFR Part 800 – Protection of Historic Properties. Every effort shall be made to avoid adverse impacts. These efforts may include screening and/or sensitive design that would be compatible with cultural landscape resources.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-5 Submittals	Historic Preservation Treatment Program: The contractor shall submit a written plan for each phase or process including protection of surrounding materials during operations. Contractor shall describe in detail materials, methods, and equipment to be used for each phase of work. If alternative methods and materials to those indicated are proposed for any phase of work, contractor shall provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project. The contractor shall document, through videotape or photograph and submit to the Contracting Officer prior to commencement of work, existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by historic treatment operations.	Yosemite National Park; Contractor
MM-HIST-6 Removed and Salvaged Historic Materials:	Contractor shall handle removed and salvaged historic materials in accordance with the following: • Clean salvaged historic items. • Pack or crate items after cleaning. Identify contents of containers. • Store items in a secure area until delivery to the NPS. • Transport items to storage area approved by Contracting Officer. • Protect items from damage during transport and storage. • Do not dispose of items removed from existing construction without prior written consent of Contracting Officer.	Yosemite National Park; Contractor
MM-HIST-7 Removed and Reinstalled Historic Materials	Contractor shall handle removed and reinstalled historic materials in accordance with the following: • Clean and repair historic items to functional condition adequate for intended reuse. • Pack or crate items after cleaning and repairing. Identify contents of containers. • Protect items from damage during transport and storage. • Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.	Yosemite National Park; Contractor
MM-HIST-8 Existing Historic Materials to Remain	The contractor shall protect construction indicated to remain against damage and soiling during historic treatment. When permitted by Contracting Officer, items may be removed to a suitable, protected storage location during historic treatment, and cleaned and reinstalled, as appropriate, to their original locations after historic treatment operations are complete.	Yosemite National Park; Contractor
MM-HIST-9 Storage and Protection	When removed from their existing location, contractor shall store historic materials within a weather-tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Contractor shall secure stored materials to ensure protection from theft.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-9 Storage and Protection (cont.)	• Identify removed items with an inconspicuous mark indicating their original location. • Develop a key plan when many similar items are scheduled for removal and reinstallation.	
MM-HIST-10 Exterior Cleaning and Repairing	Contractor shall conduct exterior cleaning and repair of historic structures in accordance with the following: • Proceed with the work only when forecasted weather conditions are favorable. • Not attempt repairs during rainy or foggy weather. Not apply primer, paint, putty, or epoxy when the relative humidity is above 80 percent. Not remove exterior elements of structures when rain is forecast or in progress. • Not perform exterior wet work when the air temperature is below 40 deg F (5 deg C). • Not begin cleaning, patching, or repairing when there is any likelihood of frost or freezing. • Not begin cleaning when either the air or the surface temperature is below 45 deg F (7 deg C) unless approved means are provided for maintaining a 45 deg F (7 deg C) temperature of the air and materials during, and for 48 hours subsequent to, cleaning.	Yosemite National Park; Contractor
MM-HIST-11 General Historic Resource Protection	Contractor shall undertake the following historic resource protection measures: • Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation. • Ensure that supervisory personnel are present when work begins and during its progress. • Protect existing materials during installation of temporary protections and construction. Not deface or remove existing materials. • Obtain Contracting Officer approval prior to Attaching temporary protection to existing construction. • Protect landscape work adjacent to or within work areas as follows: - Provide barriers to protect tree trunks. - Bind spreading shrubs. - Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time. - Set scaffolding and ladder legs away from plants. • Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. • Notify Contracting Officer immediately of drains or systems that are stopped or blocked. Not begin Work of this Section until the drains are in working order.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-11 General Historic Resource Protection (cont.)	• Provide a method to prevent solids including stone or mortar residue from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed on corresponding project. • Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.	
MM-HIST-12 Protection During Application of Chemicals	Contractor shall undertake the following during the application of chemicals: • Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm or damage resulting from applications of chemical cleaners and paint removers. • Comply with requirements in Division 01 Section "Temporary Facilities and Controls." • Cover adjacent surfaces with materials that are proven to resist chemical cleaners selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining. • Do not clean surfaces during winds of sufficient force to spread cleaning solutions to unprotected surfaces. • Neutralize and collect alkaline and acid wastes and dispose of outside park boundaries. • Dispose of runoff from chemical operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.	Yosemite National Park; Contractor

MM-HIST-13
Protection During Use of Heat-Generating Equipment
	Contractor shall comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
	• Obtain Contracting Officer's approval for operations involving use of open-flame or welding equipment.
	  - Notification shall be given for each occurrence and location of work with heat-generating equipment.
	  - Obtain the appropriate permit from the park as required.
	• As far as practical, use heat-generating equipment in shop areas or outside the building.
	• Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.
	• Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
	• Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
	  - If combustible material cannot be removed, provide fireproof blankets to cover such materials.
		Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-13 Protection During Use of Heat-Generating Equipment (cont.)	• Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material. • Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings. • Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained. • Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.	
MM-HIST-14 Historic Preservation Treatment Procedures	Contractor shall undertake the following historic preservation treatment procedures: • Retain as much existing material as possible; repair and consolidate rather than replace. • Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure. • Use reversible processes wherever possible. • Use traditional replacement materials and techniques if possible. New work shall be distinguishable from old work and original materials and techniques. • Record the existing condition before commencing with repair work; document with preconstruction photos, sketches and field notes. Record repair work during construction with periodic construction photos and daily inspection reporting. Photo documentation is specified in Division 01 Section "Photo Documentation For Historic Preservation Projects". • Prohibit smoking by personnel performing work on or near historic structures. • Notify Contracting Officer of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion. - Do not proceed with the work in question until directed by Contracting Officer. • Where Work requires existing features to be removed, cleaned, and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate. • Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish them from original materials. Record the legend of identification marks and the locations of these marks on Record Drawings. • When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid over-cleaning to prevent damage to existing materials during cleaning. Only the gentlest methods available should be attempted. Initiate cleaning using hand cleaning methods before introducing power cleaning methods and equipment.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES		
MM-AR-1 Archeological Resources	Train all members of the restoration/construction teams in proper handling of inadvertent discovery of archaeological resources. Training would involve information regarding the types of archeological materials that are likely present in the specific project area, how to identify archeological materials, and the procedures for contacting the appropriate parties in the event that archeological materials are encountered during restoration/construction activities. All restoration/construction personnel would be required to participate in the training, and written guidelines would be prepared and distributed to aid in identification of archeological materials and to inform workers of the procedures to follow in case of a discovery or potential discovery. If buried archeological resources such as flaked stone or groundstone, historic debris, building foundations, midden soils or human bone are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within a 100-foot radius of the find until a qualified archeologist can assess the significance of the find. Inadvertent discoveries would be treated in accordance with 36 CFR 800.13 (Protection of Historic Properties: Post-review discoveries). The archeological resource would be assessed for its eligibility for listing on the National Register in consultation with the SHPO and representatives of traditionally associated American Indian tribes and groups (if it is an American Indian archeological site), and a determination of the project effects on the site would be made. If the site would be adversely affected, a treatment plan would also be prepared as needed during the assessment of the site's significance. Assessment of inadvertent discoveries may require archeological excavations and/or archival research to determine resource significance. Treatment plans would fully evaluate avoidance, project redesign, and data recovery alternatives before outlining actions proposed to resolve adverse effects. If human skeletal remains are encountered, protocols under federal and state law would apply. All work shall stop in the vicinity of the discovery, and the find would be secured and protected in place. The appropriate county coroner (Mariposa or Merced) and Park Archeologist would both be immediately notified. If a analyses determine that the remains are American Indian, and that no further coroner investigation of the cause of death is required, the coroner would then be required to contact the NAHC (pursuant to Section 7050.5[c] of the California Health and Safety Code) and the County Coordinator of Indian Affairs. The remains would also be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries).	Yosemite National Park; Contractor
MM-AR-2 Ground Disturbance and Testing	Mangement actions involving moderate to severe ground disturbance (trail reroutes; formalization of social trails; excavations for subsurface utilities; development of campgrounds; removal of abandoned infrastructure and/or facilities, construction of buildings, structures, parking lots, and roads; topographic recontouring; decompaction and plant salvage; and actions that may focus visitor use at areas with sensitive surface resources) within or adjacent to the boundaries of known archeological sites shall be preceeded by intensive surface survey and/or controlled subsurface testing, as determined appropriate given past studies and findings. Initial limited testing shall be conducted in the area(s) proposed for ground disturbance, to first determine if the presence of site components can be verified. If so, the methods of achieving the proposed action may be modified and/or relocated, if possible. If effects could not be avoided, archeological treatment measures would be site-specific and contingent on previous studies' results and the level of work proposed.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES (cont.)		
MM-AR-3 Ground Distrubance and Monitoring	A Government provided Archeological Monitor, and as necessary, Native American Monitor, will observe all ground-disturbing site work, including construction of temporary facilities at all culturally sensitive areas, from a safe location mutually agreed on by Contractor, Contracting Officer and Monitors. As new ground is broken, Monitors will examine excavated materials, using construction layout centerline and perimeter staking as a reference point to record locations of findings. Monitoring may also be included as part of a treatment plan for individual resources following initial testing as per MM-AR-2 Prior to construction, mark with flagging all sensitive cultural resources to be protected within the project area identified per the requirements of the plans and specifications. Proper placement of flagging shall be verified by the Contracting Officer. Upon verification, erect necessary fencing to identify and protect cultural resources from disturbance. Do not begin ground-penetrating work such as excavation, trenching, drilling, or stump and root removal in culturally sensitive areas without the presence of Archeological Monitor, and if required, Native American Monitor. The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. If the monitor determines that any portion of the proposed action could have an adverse effect on the site, alternative methods of accomplishing the action shall be discussed with the restoration personnel. Restoration activities within site boundaries shall be conducted using manual tools rather than mechanized equipment whenever possible, and no stock animals or wheeled vehicles used for transport of workers and tools shall be allowed within 10 meters of the known site boundary. If Archeological Monitor or Native American Monitor discovers resources, immediate relocation of the work to a non-sensitive area may be required to allow Monitors to take soil samples and record resources. While Monitors are documenting resources in sensitive areas, Contractor shall relocate work to non-sensitive areas. If an Archeological Monitor requires access to a construction area the contractor shall furnish safe access, free from recognized hazards, to enable the monitor to complete his/her duties. This will commonly involve trench access when soil sampling is deemed necessary by the Archeologist. If resources are discovered while Monitors are absent, stop work immediately and report the discovery to the Contracting Officer. Stop Work: Cease all activities in the area of discovery and protect the resources discovered. In the event the discovery represents human remains or any objects subject to the Native American Graves Protection and Repatriation Act (NAGPRA), the NPS will follow procedures outlined in NAGPRA regulations. This will require a stoppage of work in the area of work for a minimum of 30 calendar days. In the event of an inadvertent discovery of Cultural Resources, be prepared to stop work and continue in other areas. The Contractor shall plan, schedule, and execute the work to prevent stoppages at one area from stopping all work at the construction site.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES (cont.)		
MM-AR-4 Daily work schedule	A Daily Work Schedule is required for all work occurring within archeologically sensitive areas. Include all work that is to occur within the area and key the schedule to the drawings to include the following: 1. Starting and ending dates of ground-disturbing construction. 2. Locations of temporary facilities, such as barriers, field offices, staging areas, sanitary facilities, borrow pits, and haul and access roads. 3. Types of construction, such as clearing, topsoil stripping, structure or trench excavation, landscaping, and post construction clean-up. 4. Methods and equipment used for each type of construction. 5. Plan for relocating work in the event of temporary work stoppages at each archeologically sensitive area 6. A permit is required for any archeological investigations (e.g. excavation, shovel testing, coring, pedestrian survey, underwater archeology, rock art documentation, or other types of reconnaissance including the archaeological monitoring of construction) carried out on parklands by non-NPS personnel, unless carried out under a contract or a cooperative agreement specifically written for archeological investigations. Permits are issued under the Archaeological Resources Protection Act of 1979 (ARPA). The NPS does not issue a permit for archeological investigations carried out by NPS archeologists, or to archeologists working on NPS archeological projects under a contract or cooperative agreement. 7. Applicants should submit a Permit Application (DI Form 1926 (Rev Sept 2004) OMB No. 1024-0037, approved through 1/31/2008 – the Permit Application form is available in pdf format) to the manager of the park in which they propose to work; or to the regional director, with a copy to the park manager.	Yosemite National Park; Contractor

APPENDIX D

DRAFT FLOODPLAIN STATEMENT OF FINDINGS

APPENDIX D

FLOODPLAIN STATEMENT OF FINDINGS FOR THE MERCED WILD AND SCENIC RIVER COMPREHENSIVE MANAGEMENT PLAN/DEIS

This Floodplain Statement of Findings is included in this document for public review to meet the obligations of Executive Order 11988 (*Floodplain Management*), Director's Order #77-2: Floodplain Management (2003), and the NPS Procedural Manual 77-2: Floodplain Management (update 2004).

INTRODUCTION

The National Park Service (NPS) has prepared the *Merced Wild and Scenic River Comprehensive Management Plan Draft Environmental Impact Statement (Merced River Plan /DEIS)* to provide direction and propose specific actions to protect and enhance ecological and natural resource values of the Merced Wild and Scenic River, support opportunities for visitors to experience and develop direct connections to the Merced River, institute a visitor-use management program, and provide clear direction on land uses and associated developments in the river corridor. It is based on the broad goals of the 1980 *General Management Plan* for Yosemite National Park.

The purpose of this Floodplain Statement of Findings is to review the *Merced River Plan/DEIS* in sufficient detail to:

- Provide an accurate and complete description of the flood hazard assumed by implementation of the proposed action (without mitigation)
- Provide an analysis of the comparative flood risk among alternatives
- Describe the effects on floodplain values associated with the proposed action
- Provide a thorough description and evaluation of mitigation measures developed to achieve compliance with Executive Order 11988 *(Floodplain Management),* Director's Order 77-2, and Procedural Manual 77-2: Floodplain Management

Floodplains and Floodplain Extent

Flood hazard areas regulated by the NPS include the 100-year floodplain (1% annual chance of inundation), the 500-year floodplain (0.2% chance of annual inundation, and the Extreme Floodplain (largest magnitude flood possible at a site). According to the NPS Director's Order 77-2 ("Floodplain Management"), for any proposed action that is found to be in the applicable regulatory floodplain, the NPS must prepare a floodplain assessment, known as a Statement of Findings, in accordance with NPS Procedural Manual 77-2: Floodplain Management.

The best available data were used to determine the extent of existing floodplain boundaries and water surface characteristics of the Merced River, as documented in the DEIS. Floodplains have not been defined within the Merced River above Nevada Fall (including Little Yosemite Valley), nor within the Merced Gorge.

GENERAL CHARACTERISTICS OF FLOODING IN THE AREA

Flooding along the Merced River can be generally categorized as one of two general types: (1) *spring floods* include flooding that occurs as a result of spring and summer snowmelt and associated runoff; (2) W*inter floods* or *rain on snow events* include those that occur during the late fall and winter (September through April), primarily as a result of intense rainfall or rainfall on snow. From 1916 through 1989, 124 of 140 recorded high flows on the Merced River in Yosemite Valley were spring floods that occurred in response to spring or early summer snowmelt conditions (NPS 1991). Only about 10% of total floods in the park are winter floods or rain on snow events. However, these events are responsible for the highest floods recorded, especially where warm heavy rains fall on snow in higher elevations. Frazil ice, while less common, is another cause of flooding within the park. Frazil ice occurs within waterfalls, and is generated by ice crystals at the base of a waterfall when air temperature drops to below freezing. Frazil ice can be many feet thick, which can cause localized impoundments and other flooding.

At the beginning of the wet season, the ground is extremely dry, and about 3 to 5 inches of precipitation is required to satisfy the retention storage capacity of the soil before any significant runoff occurs. Later in the season, when the ground may be very wet and there may be a moderate snow cover at the higher elevations, heavy rainfall over the basin can cause large flood runoff. An intense storm with a high freezing level may also result in flood runoff from almost the entire basin, with as much as 2 inches of snowmelt augmenting the rainfall, based on historic measurements. Most of the runoff from the Merced River basin occurs from November through July (Madej et al. 1994).

Well-functioning floodplains can potentially provide an array of natural resource values within the Park, including habitat for vegetation and wildlife, periodic disturbance to habitats within floodplains (which can support ecological value and spatial diversity in habitat), dissipation of flood energy by allowing flood waters to spread across a floodplain area, benefits to waterway hydrologic processes including fluvial transport mechanisms and river geomorphic processes, and groundwater recharge in areas where soils are sufficiently pervious. Key floodplains in the study area include the broad floodplains of Yosemite Valley, Little Yosemite Valley, El Portal, and Wawona.

The discussion of flooding along the Merced River is divided among the following segments:

Merced River above Nevada Fall

The Merced River's floodplains in remote areas above Nevada Fall have not been defined. Steep topography limits the floodplain in the upper canyon areas. High-elevation tributaries (e.g., Merced Peak Fork and Triple Peak Fork) are sparsely vegetated with scattered patches of alpine riparian scrub and alpine willow thickets. Within Little Yosemite Valley, the floodplain likely encompasses most of

the valley floor; however, the 100-year floodplain has not been mapped. Here, the river meanders across its floodplain, creating oxbow lakes and meander cutoffs. As the river descends and the gradient becomes gentler, lodgepole pines, aspens (Populus tremuloides), willows (Salix spp.), and alders (Alnus spp.) become more prevalent. Willows often colonize where point bars form (at the margins of, or within, the river channel). Riparian species often intergrade with coniferous forest at or near the river's upper banks (NPS 1997a; Sawyer et al. 2009).

Although 100-year floodplains have not been mapped in this area, it is assumed that the Merced Lake High Sierra Camp is located within the existing floodplain.

Yosemite Valley

Yosemite Valley has a well-developed, relatively wide floodplain that is confined by steep valley walls. The Merced River in Yosemite Valley has a relatively mild slope, with an average of 0.1%. In the middle reach of the river in Yosemite Valley, downstream of Clark's Bridge to the El Capitan moraine, the river flows through a shallow channel approximately 100 to 300 feet wide.

Riparian zones in Yosemite Valley are characterized by broadleaf deciduous trees, such as white alder (*Alnus rhombifolia)*, black cottonwood (*Populus trichocarpa*), big-leaf maple *(Acer macrophyllum)*, white fir, and willow species. Riparian areas within the valley are rich in species diversity and structure. Riparian vegetation is regularly disturbed by the deposition and removal of soil and the force of floodwaters. Plants in this zone colonize newly formed river-edge deposits readily. The distribution of riparian communities varies with soil saturation and frequency of disturbance. For example, big-leaf maple riparian forests grow on moist gravelly soils in protected spots on alluvial soils bordering streams, whereas sandbar willow woodlands occur on point and mid-channel bars that are washed over annually by spring floods (NPS 1994). In Yosemite Valley, the character of the floodplain varies in different locations due to local hydraulic controls. From Clark's Bridge to Housekeeping Camp in the east Valley, the river floods areas outside the main channel with shallow swift flows that cut across meander bends. Near Yosemite Lodge and downstream to the El Capitan moraine, flood waters back up against the dense vegetation and tend to be deep, low velocity, and low energy. From the El Capitan moraine downstream, the river channel is steeper and confined in the narrow river canyon, the floodplain is narrow, and flow velocities are high.

In 1879, large boulders were blasted to deepen and widen the river gap through the El Capitan moraine, which lowered the base level of the Merced River by 4 to 5 feet (Milestone 1978). As a result, the extent and frequency of flooding in the upstream meadows was reduced, possibly leading to drier conditions and the loss of historic wetlands.

Regular flooding and subsequent deposition of alluvial sediments have been instrumental in the formation of Yosemite Valley. Flooding continues to support a variety of natural processes in the valley, such as deposition of flood-borne sediment; channel avulsion (i.e., abandonment of an old river channel and the creation of a new one); and the development of complex channel patterns and valuable riparian and wetland habitat. The largest document events occurred in 1937, 1950, 1955, and 1997, with peak discharges measured in the range of 22,000 to 25,000 cubic feet per second at Pohono

Bridge. These floods were the result of rain-on-snow events. Several large undocumented events also occurred during the 1860s and 1870s.

The January 1997 flood was the largest recorded flood within the park with a peak discharge of 10,000 cubic feet per second at Happy Isles and 25,000 cubic feet per second at Pohono Bridge (Eagan 1998). The flood inundated roads, picnic areas, park offices, and lodging units. It caused extensive damage to NPS facilities, including roads, bridges, buildings, and Yosemite Valley's electric, water, and sewer systems. The flood also altered natural features and caused downed trees, movement of landslide talus into streams, channel erosion, and substantial changes in channel morphology (NPS 1997b). This flood was estimated to have a recurrence interval of 90 years (NPS 1997b), or about a 1.1% chance of occurring in any given year.

The deposition and removal of soil and the force of flood waters in Segment 2 regularly disturb riparian vegetation. The park has historically cleared large wood from the Merced River to improve flow (to reduce flooding hazard), prevent bank erosion that might compromise park infrastructure, for visitor safety, to remove hazards to commercial rafting, and for aesthetic reasons. Since 1993, it has been park policy to allow large wood in the Merced River to remain, sometimes with some manipulation in its placement, unless it causes a serious safety concern or threatens infrastructure.

Facilities located within the 100-year floodplain within this segment include (generally moving from east to west) portions of the Upper Pines Campground area including a recreational vehicle dump station, a portion of Lower Pines Campground including four restrooms, most of North Pines campground including four restrooms and a lift station, a portion of Backpackers Campground, and most of the Concessioner Stable and the 18 associated housing units and community kitchen. Additionally, most of the Housekeeping Camp area including lodging units, showerhouses and restrooms, and other structures, the Lower River Amphitheatre, and the Yosemite Village Day-use Parking Area are located in the 100-year floodplain. The Lower Tecoya Dormitories A, B, C, D, E, F and the Laundry Building, in addition to two Concessioner apartment buildings and associated garages and sheds, eight single-family residences, the Concessioner General Office, the Concessioner Garage, the Concessioner Valley Fire House, Lost and Found, security buildings are all in the 100-year floodplain. In the vicinity of the Yosemite Lodge area, structures within the 100-year floodplain include Superintendent's House (Residence 1) and garage, theYosemite Creek sewage lift station, groundwater wells near Yosemite Creek, and four lodging buildings at the Yosemite Lodge in addition to three housing buildings near Yosemite Lodge (Thousands Cabins), In the West Valley, the Swinging Bridge Picnic Area, the Sentinel Beach Picnic Area, the Yellow Pine Administrative Campground, the Cathedral Beach Picnic Area, and the gauging station near Pohono Bridge are in the 100-year floodplain.

Over the past two decades, the National Park Service has implemented numerous efforts to restore the underlying natural processes that sustain Yosemite Valley riparian habitats. These efforts include, invasive plant eradication, fencing off sensitive areas, and increasing inundation levels through restoration of natural drainage patterns. A more detailed description of past and present restoration projects is included in the *Merced River and Riparian Vegetation Assessment* (Cardno ENTRIX 2011) and the *Assessment of Meadows in the Merced River Corrido*r (Ballenger et al. 2011). These efforts have been successful in improving the overall condition of riparian areas throughout Yosemite Valley.

However, these reports also identify a number of persisting stressors on the Valley's riparian ecosystems, such as roads, parking areas, structures, campgrounds, and informal trails.

Merced River Gorge and El Portal Watershed

From the location of the former Cascades Diversion Dam downstream to the El Portal Administrative Site, the river channel is steep and confined to a narrow river gorge. In this area, the floodplain is narrow and flow velocities are very high. The Merced River Gorge is a unique display of lower elevation habitat. It is lined with a narrow band of riparian vegetation along the river, bordered by a dense mosaic of chaparral and foothill woodland communities (chaparral/oak woodland zone) on the steep canyon walls.

The Merced River channel in El Portal can shift during large floods, including movement of large boulders that define the channel. One hundred-year discharge of the Merced River in El Portal is estimated to be 32,800 cubic feet per second (PBS&J 2011). Flooding has been an important aspect of the development of riparian communities along the Merced River and its tributaries that intersect drier adjacent vegetation types of El Portal. Within this area, El Portal Road and small levees alter the floodplain by restricting flow during flood events and forming a barrier to channel migration. Facilities located within the 100-year floodplain within this segment include temporary El Portal Special Park Uses Trailers, the embankment/levee between El Portal Market and gas station and the river, Odger's Fuel Storage Facility, the AT&T building, a water valve station, NatureBridge office and employee housing building, the old Wastewater Treatment Plant, portions of Abbieville/Trailer Village employee housing area, and the administrative parking area between Foresta Road and the Merced River at the National Park Service's Warehouse and Administrative Complex. As with certain points within Yosemite Valley, this infrastructure has impacted floodplain habitats.

In the El Portal area, riparian communities occur along tributaries of the Merced River, on flat topographical shaded terraces above the river, in backwater channels, and in areas where runoff from upland sites collects in natural depressions. Native Oregon ash (*Fraximus latifolia*) trees occur in the wetter areas, as well as orchard components in some locations. Foothill pines and valley oaks tend to dominate the drier terraces adjacent to riparian sites.

South Fork Merced River

The floodplain in Wawona along the South Fork is an elongated alluvial valley. In this area, the river meanders through a large floodplain meadow, and the channel can shift laterally during large floods. Upstream of the Big Creek confluence, the average annual flow was 174 cubic feet per second between 1958 and 1968, as measured at the Wawona gauging station, with an estimated maximum flow of 15,000 cubic feet per second in December 1955. The 100-year discharge of the South Fork Merced River is estimated to be 19,700 cubic feet per second (PBS&J 2011).

In the portions where the gradient is gentlest, riparian vegetation (willows and alders) becomes more prevalent. Willows often colonize sandbars that are deposited at the margins of or within the river channel. In this area, the riparian corridor resembles the riparian corridor seen along the Merced

River as it flows through Yosemite Valley. Also found in this area is Sierra sweet bay (*Myrica hartwegii*), a shrub endemic to the Sierra Nevada. In Yosemite National Park, Sierra sweet bay is found at the average high water line of the South Fork Merced River downstream from Wawona and along Big Creek (NPS 2012). The NPS (2002) considers Sierra sweet bay a sensitive species, and the California Native Plant Society (CNPS Rank 4.3) identifies the plant as being of limited distribution.

Facilities located within the 100-year floodplain within this segment include portions of the Pioneer Yosemite History Center, the Wawona Covered Bridge, South Fork Wawona Picnic Area, a portion of the Wawona Campground, the Yosemite Transportation Company office, utility buildings, the Ranger Station, and a bakery building. As with certain points within Yosemite Valley, this infrastructure has impacted floodplain habitats. In addition, trampling of riparian vegetation and associated erosion also occurs in this area, resulting from use in the vicinity of the Wawona Store and Gas Station area and the Wawona Campground.

PREFERRED ALTERNATIVE

The *Merced River Plan/DEIS* includes an evaluation of six alternatives including five action alternatives, each of which would implement a series of management actions within the Merced Wild and Scenic River corridor. Each action alternative addresses issues relevant to protection and enhancement of river values, user capacity management, and land use and facilities. Alternative 5: *Enhanced Visitor Experience and Essential Riverbank Restoration* has been identified as the Preferred Alternative. This alternative is characterized by restoring riparian areas within 100 feet of the ordinary high water mark. To address free-flowing conditions, Alternative 5 includes the removal of Sugar Pine Bridge and reestablishing channel complexity in East Yosemite Valley. Alternative 5 includes restoration of 203 acres within the river corridor, including removing existing campsites within 100-feet of the ordinary highwater mark, Housekeeping Camp lodging units within the ordinary high water mark, informal trails in meadows and wetland areas, and roadside parking adjacent to meadows. In terms of recreation, limited private boating would be allowed by permit on river stretches within all segments. Under Alternative 5, peak daily visitation within Yosemite Valley would be slightly reduced (19,900) as compared to peak visitation at present (20,900). Additional temporary and overflow parking areas would be located in West Yosemite Valley and at Abbieville/Trailer Village in El Portal to alleviate traffic congestion on busy peak summer days. The shuttle system would be expanded to serve these new locations.

Existing Structures in the Floodplain

The NPS Director's Order 77-2 and Procedural Manual 77-2 consider the evaluation of actions that may be grouped into the following three categories:

- Class I Actions – include administrative, residential, warehouse and maintenance buildings, and nonexempted (overnight) parking lots

- Class II Actions – those that would create "an added disastrous dimension to the flood event." Class II actions include schools, clinics, emergency services, fuel storage facilities, large sewage treatment plants, and structures such as museums that store irreplaceable records and artifacts.

- Class III Actions – Class I or Class II Actions that are located in high hazard areas such as those subject to flash flooding.

The regulatory floodplain for Class I actions is the 100-year floodplain. The following existing structures in the study area's regulatory floodplain constitute Class I Actions:

- Housekeeping Camp; Backpackers, Lower Pines, and North Pines campgrounds; portions of Ahwahnee Row and Tecoya housing area, the Concessioner General Office and Garage, select Yosemite Lodge buildings, and associated infrastructure.

The following existing structures located in the study area's regulatory floodplain constitute Class II Actions:

- Odger's Fuel Storage Facility (main tanks are outside of the 500-year floodplain, other facilities with less than 40,000 gallon per day capacity are located within the 500-year floodplain), El Portal Gas Station, and the El Portal Wastewater Treatment Plant (500-year floodplain).

There are no Class III actions in the study area.

Proposed Actions

Under the Preferred Alternative, the following actions would be located within floodplains and would either have a net beneficial impact on floodplains, or would not affect floodplain function. Therefore, the following actions are not discussed further within this document:

- Removal of conifer seedlings and saplings from meadows
- Reinstitution of low intensity/high frequency fire as an ecological process
- Installation of logjams and large wood management
- Placement of large wood (including large trees with root wads) between Ahwahnee and Stoneman bridges which would increase roughness in the river as well as channel complexity
- Establishing a riparian buffer that includes a restriction on new development or redevelopment of existing facilities within 150 feet of the ordinary high water mark
- Meadow restoration at Ahwahnee, El Capitan, Leidig, Cooks, Slaughterhouse, Bridalveil, and Stoneman meadows

Under the Preferred Alternative, the following facilities would be removed from the floodplain. Removal of these existing structures from the floodplain represents a net beneficial impact. Therefore, removal of these facilities is not discussed further within this document:

- Concessioner General Office and Concessioner Garage
- 34 units from within the observed ordinary high water mark at Housekeeping Camp

- Abandoned infrastructure such as remnant pavement associated with the former Upper and Lower River Campgrounds
- Campsites within 100' of the ordinary high water mark at Backpacker's Camp, Lower Pines, and North Pines Campgrounds
- Sugar Pine Bridge and the associated road berm
- Imported rock/concrete/asphalt/soil at Greenemeyer sandpit
- Housing units at the Yosemite Lodge
- Odger's Fuel Storage Facility. This facility is presently in use and provides important storage and distribution capacity for fuel within the area. The existing tanks are located outside of the floodplain, while remaining facilities are located within the 500-year floodplain. The facility would be removed from the floodplain.
- Old Wastewater Treatment Plant in El Portal

Under the Preferred Alternative, the following facilities would remain or could be placed in the floodplain. Rational for leaving these facilities within the floodplain, associated risk, and proposed mitigation or management strategies for these facilities are discussed subsequently:

- Merced River above Nevada Fall:
  - Merced Lake High Sierra Camp
- Yosemite Valley:
  - Ahwahnee Row Houses
  - Tecoya Dorms and other Concessioner Housing in the vicinity of Indian Creek (apartments and single-family residences)
  - Yosemite Lodge area facilities including overnight units and associated parking, laundry building, lost and found, the security building, and the Concessioner Valley Fire House, the Superintendent's House, Yosemite Creek Sewage Lift Station, groundwater wells near Yosemite Creek, four lodging buildings at Yosemite Lodge, in addition to three housing buildings near Yosemite Lodge (Thousand Cabins)
  - Housekeeping Camp, with232 units, shower houses, restrooms, and laundry facilities Yosemite Valley Campgrounds including North Pines, Backpackers, portions of Lower Pines, Upper Pines, and Yellow Pines Administrative Campgrounds, plus new camping facilities (30 walk-in camp sites) at Upper River Campgrounds and near Upper Pines Campground
  - Concessioner Stable
  - Yosemite Village Day-Use Parking Area and Rerouting of Northside Drive to south of the Yosemite Village Day-Use Parking Area
  - Lower River Amphitheater
  - West Valley picnic areas

  - Guaging Station near Pohono Bridge

- Merced River Gorge and El Portal:
  - Facilities near Old El Portal including the AT&T Building, NatureBridge office and employee housing, and a water valve station
  - El Portal Market building
  - El Portal gas station
  - Administrative parking area between Foresta Road and the Merced River at the National Park Service's Warehouse and Administrative Complex
  - Temporary El Portal Special Park Uses Trailers
  - Embankment/levee between El Portal Market and gas station and the river
  - Portions of Abbieville/Trailer Village employee housing area
- South Fork Merced River:
  - Yosemite transportation Company office
  - Historic facilities including the Wawona Covered Bridge and portions of the Pioneer Yosemite History Center
  - Utility buildings
  - Ranger Station
  - Bakery building
  - Portions of the Wawona Campground and the South Fork Wawona Picnic Area

RATIONALE FOR CONTINUED USE OF THE FLOODPLAIN

To the extent practicable and appropriate, the Preferred Alternative includes the removal of existing facilities to outside of the 100-year floodplain, and does not propose to place new facilities in the floodplain that would interfere with floodplain function or that would cause or exacerbate flood related hazards. However, NPS was not able to develop a feasible alternative that involved removal of all existing facilities from the 100-year floodplain. Key constraints that prevent the removal of additional facilities from the 100-year floodplain center on a lack of available land area that is not located in a floodplain or rockfall hazard zone. The following provides additional information and details regarding existing development that would remain in the floodplain with implementation of the Preferred Alternative.

Existing and Proposed Development that would Remain or be Located in the Floodplain in the Preferred Alternative

Merced River above Nevada Fall

High Sierra Camp Reduction to 11 Units. Removal of existing facilities would result in a net benefit to floodplains, and beneficial effects are not discussed further. Remaining facilities (11 units) are presumed to be located within the 100-year floodplain based on their proximity to the river, although floodplains have not been delineated. The remaining facilities would not be removed because they provide a unique experience to visitors within the area.

Yosemite Valley

Ahwahnee Row Houses. These houses would not be removed because they are important contributing elements to the Yosemite Valley cultural landscape, are contributors to the Yosemite Village Historic District, and their removal or demolition would result in an adverse effect on this historic resource. Therefore, these facilities would not be removed.

Tecoya Dorms and Other Concessioner Housing in the Vicinity of Indian Creek (apartments and single-family residences). The Tecoya dorms are a part of the National Register listed Yosemite Valley Historic District, and their removal or demolition, as well as that of concessioner housing, would result in an adverse effect to this historic resource. Therefore, these facilities would not be removed.

Yosemite Lodge Area Facilities (overnight units, parking, laundry building, lost and found, security building, Concessioner Valley Fire House, Superintendent's House, Yosemite Creek Sewage Lift Station, groundwater wells near Yosemite Creek, four lodging buildings at Yosemite Lodge, three housing buildings near Yosemite Lodge (Thousand Cabins)). These buildings facilities within the Yosemite Lodge complex and the day use parking lot are located within the 100-year floodplain. These would not be removed under the Preferred Alternative. Existing facilities that are located within the floodplain are adjacent to areas that are above or outside of the floodplain, including most of the Yosemite Lodge complex. These facilities are important contributing elements to the Yosemite Valley cultural landscape, provide unique experience and access for visitors, provide lodging and/or critical facilities services to the area, and therefore would not be removed.

Housekeeping Camp (232 units, shower houses, restrooms, laundry facilities). These units and facilities are available seasonally, and the area is closed for overnight use in the winter, when most high-flow winter flooding events have occurred. In the Preferred Alternative all but 34 units at Housekeeping Camp would remain in the floodplain along with other existing structures located on site, for a total of 232 units remaining. These facilities have a unique function within Yosemite Valley and provide a unique experience to visitors – opportunity for a rustic camping experience with "developed camping shelters" that eliminate the need to purchase a large amount of camping equipment. Also, these facilities would be closed during periods of high flood risk, and there would be sufficient time to evacuate visitors in the unlikely event that evacuation would be necessary. Therefore, these facilities would not be removed.

Yosemite Valley Campgrounds (North Pines, Backpackers, portions of Lower Pines, Upper Pines, and Yellow Pines Administrative Campground, plus new camping facilities (30 walk-in camp sites) at Upper River Campgrounds and near Upper Pines Campground). To preserve the floodplain values in areas close to the river while still preserving the unique visitor experiences afforded by these campgrounds, existing units within these campgrounds that are located within 100 feet of the high water mark would be removed. However, other existing campsites that are located within the larger floodplain area would not be removed, and new walk-in camping opportunities would be provided at Upper River Campground and near Upper Pines Campground. These campgrounds are/would be closed during the winter, when most high flow winter or rain-on-snow flooding events have historically occurred. There would be sufficient time to evacuate visitors in the unlikely event that evacuation would be necessary. These facilities provide or would provide unique visitor experiences and would be closed during periods of high risk. Therefore, they would not be removed.

Concessioner Stable. The concessioner stable supports commercial day rides along pack stock trails in the area, and also offer High Sierra Camp rides. Thus the Concessioner stable supports unique visitor experience including horseback access to the High Sierra Camp, as well as other portions of the park. During a potential flood event, the facility could be closed or readily evacuated in order to avoid potential hazards.

Yosemite Village Day-use Parking Area and Rerouting of Northside Drive. These facilities would continue to serve as the primary day-use parking area for Yosemite Valley and serves to access Yosemite Village, and Northside Drive would be rerouted to provide improved service to the area. Design measures for these facilities would be implemented to minimize potential effects on floodplains. Maintaining the parking lot and rerouting Northside Drive would preserve unique visitor experiences afforded by parking access and enhanced vehicle access to the area. Therefore, these facilities would not be removed.

Lower River Amphitheater. The Lower River Amphitheater supports unique visitor experience within the Yosemite Valley, ranging from children's theater opportunities to weekly religious services. The amphitheater includes bench seating and a limited stage area. Maintaining the facility would preserve these and other unique visitor experiences associated with the facility, and the facility could be evacuated quickly in the event of a potential flood event. Therefore, the amphitheater would not be removed.

West Valley Picnic Areas. Picnic areas in Yosemite Valley, including the western valley, including the Swinging Beach Picnic Area the Sentinel Beach Picnic Area, and the Cathedral Beach Picnic Area support visitor access to these areas, affording scenic views and encounter with these unique natural areas. These picnic areas present minimal obstruction to flood flows, and would either be closed during seasonal flooding periods, or could be easily evacuated in the event of a flood event. Therefore, these facilities would not be removed.

Guaging Station near Pohono Bridge. The existing gauging station supports measurement and monitoring of river levels in this area. Due to the nature of the facility, which collects data on river

stage, the facility must be located within the floodplain in order to collect the needed data. Therefore, this facility would not be removed.

Merced River Gorge and El Portal Watershed

Facilities near Old El Portal (AT&T Building, NatureBridge office and employee housing, water valve station). These facilities are presently in use. NatureBridge is an official park partner, and helps the NPS to achieve its mission, while AT&T provides communications support services. Additionally, the NatureBridge facility is on the list of classified structures and is an important cultural resource. The existing water valve station is critical to the function of existing infrastructure within the area. As an unmanned station, the facility does not represent a substantial risk to humans. The indicated buildings would continue to be utilized by employees, but could be easily and rapidly evacuated in the event of a potential flood. Therefore, these facilities would not be removed from the floodplain.

El Portal Market Building. This facility is presently in use and provide key services within the El Portal area. The facility would continue to be used by employees and visitors. However, because it is located in close proximity to the edge of the 100-year floodplain, it could be evacuated easily in the event of a potential flood. This facility would not be removed from the floodplain.

El Portal Gas Station. This facility is presently in use and provides important refueling capacity within the area, and support visitor use within the park and area. The facility would not be removed from the floodplain.

Administrative Parking Area (between Foresta Road and the Merced River at the National Park Service's Warehouse and Administrative Complex). This existing parking structure provides parking facilities in support of adjacent buildings and services, and is currently in use by the National Park Service. In the event of a potential flood, this area could be evacuated easily and rapidly. The facility would not be removed from the floodplain.

Temporary El Portal Special Park Uses Trailers. These facilities are considered temporary until uses can be redesignated to other areas or facilities. In the interim, the trailers remain in use and in support of Park services. In the event of a potential flood, the facilities could be easily evacuated. These facilities would not be removed from the floodplain.

Embankment/Levee between El Portal Market and Gas Station and the Merced River. This existing embankment provides partial control of high water flows in this area. While the facility does not effectively protect against 100-year flooding, it does provide some degree of protection during lesser potential flood events. The facility is unmanned. This facility provides critical support to adjacent infrastructure, and would not be removed.

Portions of the Abbieville/Trailer Village Employee Housing Area. The Abbieville/Trailer Village housing area is currently in use in support of staff. As noted, only portions of the area are located within the floodplain, and the margin of the floodplain is located in close proximity to these areas. Therefore, affected areas could be easily evacuated in the event of a potential flood. These facilities would not be removed.

South Fork Merced River

Yosemite Transportation Company Office. This facility is currently in use and supports operations and management of transportation services and transportation infrastructure within the Park. The facility is located in close proximity to the margin of the floodplain, and could be easily evacuated in the event of a potential flood. Therefore, the facility would not be removed from the floodplain.

Historic Facilities (Wawona Covered Bridge, portions of the Pioneer Yosemite History Center). These facilities would not be removed because they are important contributing elements to the Yosemite Valley cultural landscape. Their removal or demolition would result in an adverse effect on historic resources. Therefore, these facilities would not be removed.

Utility Buildings. The existing utility buildings are critical to the function of existing infrastructure within the area. Unmanned, potential flooding of the facilities does not represent a substantial risk to humans. Therefore, the facility would not be removed from the floodplain.

Ranger Station and Bakery Building. These facilities are currently in use and provide useful or required services within the area. They are located in relatively close proximity to the margin of the floodplain, and could be easily evacuated in the event of a potential flood. Therefore, these facilities would not be removed from the floodplain.

Wawona Campground and the South Fork Wawona Picnic Area. Portions of these areas are located within the floodplain. These facilities result in only minor to minimal interference with potential flood flows, are currently in use, could be easily evacuated or closed in the event of a potential flood, and afford unique camping and picnicking experiences in the Wawona area. These facilities would not be removed from the floodplain.

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

Merced River above Nevada Fall

Floods of consequence along the Merced River above Nevada Fall, including Little Yosemite Valley and the upper canyon, always occur with some warning, although flood conditions may occur more immediately than in the Yosemite Valley downstream. Risks to humans can typically be mitigated by warning and evacuation.

High Sierra Camp Reduction to 11 Units. Remaining units would presumably be subject to periodic inundation during 100-year flood events. During a major flood event, these units could become inundated with floodwaters. This could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans related to potential risk of inundation. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the camp facilities during intermittent flood events. Flooding of

sufficient depth could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Yosemite Valley

In Yosemite Valley, the character of flooding varies in different locations because of local hydraulic controls. From Clark's Bridge to Housekeeping Camp in the east Valley, the Merced River floods areas outside the main river channel with shallow, swift flows that cut across meander bends. Near Yosemite Lodge and downstream to the El Capitan moraine, flood waters back up against the moraine and dense vegetation. Flood waters in this area are of low velocity and significant depths. At Housekeeping Camp, velocities are relatively higher with lower depths.

The historic discharge in the river, measured at the Pohono Bridge gauging station, has ranged from a high of about 25,000 cubic feet per second to a low of less than 10 cubic feet per second. The mean daily discharge rate is about 600 cubic feet per second. The following discussion provides information about potential risks of continued floodplain use for each of the facilities that would remain within the floodplain.

Ahwahnee Row Houses. Flooding within Yosemite Valley including in the area of the Ahwahnee Row Houses requires a prolonged period of intense rain for at least 24 hours to create flood conditions. During a major flood event, the Ahwahnee Row Houses could become inundated with floodwaters. This could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans related to potential risk of inundation. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the row houses during intermittent flood events. Flooding of sufficient depth could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Tecoya Dorms and Other/Concessioner Housing in the Vicinity of Indian Creek (apartments and single-family residences). As discussed previously, flooding within Yosemite Valley including in this area requires a prolonged period of intense rain for at least 24 hours to create flood conditions. During a major flood event, these facilities could become inundated with floodwaters. This could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans related to potential risk of inundation. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the housing during intermittent flood events. Flooding of sufficient depth could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Yosemite Lodge Area Facilities (overnight units, parking, laundry building, lost and found, security building, Concessioner Valley Fire House, Superintendent's House, Yosemite Creek Sewage Lift Station, groundwater wells near Yosemite Creek, four lodging buildings at Yosemite Lodge, three housing buildings near Yosemite Lodge (Thousand Cabins)). As discussed previously, flooding within Yosemite Valley including in the area of Yosemite Lodge requires a prolonged period of intense rain for at least 24 hours to create flood conditions. Also, these existing facilities that are located within the floodplain are located close to the edge of the 100-year floodplain. Therefore, water depth during a 100-year flood event is expected to be relatively shallow. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans related to potential risk of inundation. However, given the nature of flooding in the Yosemite Valley, which has a relatively slow onset with sufficient time for warning and evacuation, it is anticipated that evacuation of these facilities could be completed easily. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Housekeeping Camp (232 units, shower houses, restrooms, laundry facilities). Facilities at housekeeping camp are available seasonally, and are closed for overnight use during the winter, the period when most major precipitation based flooding events occur. When flooding within Yosemite Valley does occur, it requires a prolonged period of intense rain for at least 24 hours to create flood conditions, which provides sufficient time for evacuation. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans related to potential risk of inundation. However, risk of interference with human activities is limited due to winter period closure of Housekeeping Camp. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the grounds during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Yosemite Valley Campgrounds (North Pines, Backpackers, portions of Lower Pines, Upper Pines, and Yellow Pine Administrative Campground, plus new camping facilities (30 walk-in camp sites) at Upper River Campground and near Upper Pines Campground). Facilities at other campgrounds that are or would be located within the floodplain are closed for overnight use during the winter, the period when most major precipitation based flooding events occur. When flooding within Yosemite Valley does occur, it requires a prolonged period of intense rain for at least 24 hours to create flood conditions, which provides sufficient time for evacuation. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, risk of interference with human activities is limited due to winter period closure of the campgrounds. With respect to natural resource values, continued

presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the campgrounds during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities and result in minor and intermittent additional maintenance requirements to repair flood damage.

Concessioner Stable. Flooding events are most likely to occur within this area during the winter, wherein flooding requires a prolonged period of intense rain for at least 24 hours to create flood conditions. This provides sufficient time for evacuation of the area. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. Additionally, potential flood events would require evacuation of any animals located at the facilities, if present. It is anticipated that sufficient time would be available in order to enable evacuation of humans and animals in the event of a potential flood. With respect to natural resource values, the existing stables would interfere somewhat with flood flows, but would not be anticipated to result in a substantial backup of water or constriction of the floodway, such that major deleterious effects would be generated during a flood event. During a flood event, the facilities could sustain damage, depending upon the depth of flooding, thereby requiring additional maintenance and upkeep following a flood event.

Yosemite Village Day-use Parking Area and Rerouting of Northside Drive. Flooding events are most likely to occur within this area during the winter, wherein flooding requires a prolonged period of intense rain for at least 24 hours to create flood conditions. This provides sufficient time for evacuation of the area. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. With respect to natural resource values, the parking lot and roadway would be reconstructed so as to minimize interference with floodplains, and would not include the construction of any major buildings or other facilities that would interfere with flood flows. Additionally, the parking area would be designed to handle periodic inundation, thereby minimizing erosion and other potential damage to parking facilities that could otherwise occur as a result of flooding.

Lower River Amphitheater. Flooding events are most likely to occur within this area during the winter, wherein flooding requires a prolonged period of intense rain for at least 24 hours to create flood conditions. While visitors and staff would utilize this facility, use would be transitory, due to the nature of the facility. This, combined with a relatively extended period of warning for flooding in the area provides sufficient time for evacuation of the area. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, such risks would be avoided by evacuation. With respect to natural resource values, the existing facilities would interfere only minimally with flood flows, and would not result in a major construction or interference. During a flood event, the facilities could sustain minimal damage, depending upon the depth of flooding, thereby requiring additional maintenance and upkeep following a flood event.

West Valley Picnic Areas. Similar to other areas of the Yosemite Valley, flooding events are most likely to occur within this area during the winter, wherein flooding requires a prolonged period of intense rain for at least 24 hours to create flood conditions. Picnic areas are used for short periods by Park visitors. Therefore, along with a relatively extended period of warning for flooding in the area, it is anticipated that sufficient time for evacuation of the area would be available in the event of a potential flood. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, risks to humans would be avoided by evacuation. With respect to natural resource values, the existing facilities would interfere somewhat with flood flows, but would not be anticipated to result in a substantial backup of water or constriction of the floodway, such that major deleterious effects would be generated during a flood event. During a flood event, the facilities could sustain minimal to minor damage, depending upon the depth of flooding, thereby requiring additional maintenance and upkeep following a flood event.

Guaging Station near Pohono Bridge. Flooding in this area would occur in a manner that is similar to the other facilities noted above – primarily during winter flood events. The gauging station is small in extent and does not present a major interference with natural flood flows. Additionally, the facility is unmanned and would not require evacuation. During a flood event, it is anticipated that the facility would sustain only minimal potential damage as a result of flooding.

Merced River Gorge and El Portal

The El Portal area is located in an extremely high energy, bedrock-controlled reach with little high floodplain suitable for development. Due to high flood velocities, infrastructure and developments must be located above flood levels or be massively armored. Evacuation of flood-prone areas should be mandatory during flood events of any appreciable size.

Facilities near Old El Portal (AT&T Building, NatureBridge office and employee housing, water valve station), as well as the El Portal Market Building and the El Portal Gas Station. These facilities are subject to year-round use, and are located near the margin of the floodplain. Therefore, flood water depths within these areas are expected to be minor to moderate, with areas suitable for evacuation located within a few hundred feet or less. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, it is anticipated that sufficient warning would be available to enable evacuation. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities, while floating debris could result in damage to structures and facilities. Flood flows in this area are generally anticipated to be faster-moving than within the Yosemite Valley, which could exacerbate potential for damage to

buildings and facilities, while floating debris could result in damage to structures and facilities. Damage would require maintenance and repair once flood flows recede.

Administrative Parking Area (between Foresta Road and the Merced River at the National Park Service's Warehouse and Administrative Complex). The parking area is subject to year-round use, and is located near the margin of the floodplain. Similar to other facilities in this area, suitable evacuation areas are located within a few hundred feet of the facility. During a major flood event, the parking lot could become inundated with floodwaters. Inundation could interfere with human access and use of the area, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, it is anticipated that sufficient warning would be available to enable evacuation. With respect to natural resource values, continued presence of the facilities within the floodplain would minimally interfere with flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain could result in periodic inundation of the lot during intermittent flood events. However, only minimal damage is anticipated to result from such events.

Temporary El Portal Special Park Uses Trailers. These facilities are subject to year-round use, and are located near the margin of the floodplain. Similar to other facilities in this area, suitable evacuation areas are located within a few hundred feet of the facilities, and it is anticipated that the facilities would be evacuated in advance of an anticipated flood. During a major flood event, the trailers could become inundated with floodwaters. Inundation could interfere with human access and use of the area, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, it is anticipated that sufficient warning would be available to enable evacuation. Additionally, if flood waters are sufficiently high and fast moving, trailers could potentially sustain minor to considerable flood damage. With respect to natural resource values, continued presence of the facilities within the floodplain would minimally interfere with flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain could result in periodic inundation and damage to the trailers during flood events, This could result in need for minor to extensive repairs following each flood event.

Embankment/Levee between El Portal Market and Gas Station and the Merced River. This unoccupied facility is subject to inundation during major flood events. Hazardous conditions for humans are not anticipated as a result of flooding of the embankment. In the event of a major flood event with fast moving waters, the facility could sustain minor to moderate damage due to erosive forces. With respect to natural resource values, the embankment would continue to interfere with natural flood flows along the river, resulting in a continued deleterious effect on floodplain processes. With respect to investment values, the facility could sustain damage during a flood event, which would require maintenance and repair following the event. However, the facility also provides partial protection to nearby buildings, including the gas station and store, and its presence is likely to reduce potential damage to those buildings, especially during flood events that are smaller than 100-year events.

Abbieville/Trailer Village Employee Housing Area. Portions of this area are subject to flooding during a 100-year event, as noted previously. These facilities are located near the margin of the floodplain. Similar to other facilities in this area, suitable evacuation areas are located within a few

hundred feet of the facilities, and it is anticipated that the facilities would be evacuated in advance of an anticipated flood. During a major flood event, housing areas could become inundated with floodwaters. Inundation could interfere with human access and use of the area, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, it is anticipated that sufficient warning would be available to enable evacuation. Additionally, if flood waters are sufficiently high and fast moving, the facilities could potentially sustain flood damage. With respect to natural resource values, continued presence of the facilities within the floodplain would interfere with flood flows and floodplain hydrology during major flood events, but would not cause major disruptions or constrictions of natural flood flows. With respect to investment values, continued presence of the facilities within the floodplain could result in periodic inundation and damage to the housing areas during flood events, This could result in need for minor to extensive repairs following each flood event.

South Fork Merced River

Floods of consequence in Wawona along the South Fork always occur with some warning. It takes a prolonged period of intense rain for at least 24 hours to create flood conditions. Risks to humans can typically be mitigated by warning and evacuation.

Historic Facilities (Wawona Covered Bridge, portions of the Pioneer Yosemite History Center). These facilities are subject to year-round use. Like other facilities at Wawona, these historic facilities are located within several hundred feet of the margin of the floodplain. Areas suitable for evacuation are located in adjacent areas, just outside of the floodplain. During a major flood event, these facilities could become inundated or partially inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, the facilities would be evacuated in the event of a potential or anticipated flood, thereby avoiding effects on humans. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor to moderate disruptions to flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities, while floating debris could result in damage to structures and facilities, requiring additional repair and maintenance.

Yosemite Transportation Company Office. The Transportation Company Office is subject to year-round use. The facility is located within several hundred feet of the margin of the floodplain. Areas suitable for evacuation are located in Wawona, just outside of the floodplain. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. With respect to natural resource values, continued presence of the facilities within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could damage existing

facilities, while floating debris could result in damage to structures and facilities, requiring additional repair and maintenance.

Utility Buildings. These facilities could become inundated during a major flood event. Direct consequences to humans would be minimal, because the facilities are unmanned, and would not require evacuation. With respect to natural resource values, continued presence of the buildings within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the utility buildings within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities, while floating debris could result in damage to structures and facilities, requiring additional repair and maintenance.

Ranger Station and Bakery Building. The ranger station and bakery building are subject to year-round use, and are located within several hundred feet of the margin of the floodplain. Areas suitable for evacuation are located in adjacent parts of Wawona, just outside of the floodplain. During a major flood event, these facilities could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, the facilities would be evacuated in the event of a potential or anticipated flood, thereby avoiding such risks. With respect to natural resource values, continued presence of the buildings within the floodplain would result in continued minor disruptions to flood flows and floodplain hydrology during major flood events. With respect to investment values, continued presence of the facilities within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could damage existing facilities, while floating debris could result in damage to structures and facilities, requiring additional repair and maintenance.

Wawona Campground and the South Fork Wawona Picnic Area. Like other facilities noted for Wawona that would remain in the floodplain, the campground and picnic area are located in close proximity to the floodplain margin. Therefore, suitable evacuation areas are located within several hundred feet of these facilities. During a major flood event, the campground and picnic area could become inundated with floodwaters. Inundation could interfere with human access and use of the facilities, and could cause potentially hazardous conditions for humans due to potential risk of inundation. However, the facilities would be evacuated in the event of a potential or anticipated flood, thereby avoiding such risks. With respect to natural resource values, the existing campgrounds and picnic areas are expected to cause only very minimal interference with flood flows and floodplain hydrology, and would not substantially interfere with or redirect flood flows. With respect to investment values, continued presence of the campground and picnic area within the floodplain would result in periodic inundation of the facilities during intermittent flood events. Flooding of sufficient depth or velocity could cause minor damage existing facilities, requiring additional repair and maintenance.

DESIGN OR MODIFICATIONS TO MINIMIZE HARM TO FLOODPLAIN VALUES OR RISKS TO LIFE AND PROPERTY

General Mitigation

The design of all new structures or substantial improvements to existing structures would incorporate requirements and methods for minimizing flood damage, as contained in the National Flood Insurance Program "Floodplain Management Criteria for Flood-Prone Areas" (CFR 44, 60.3) and in accordance with any local, county, or state requirements for flood-prone areas. Furthermore, park staff would maintain an active flood evacuation plan. The plan details responsibilities of individual park employees for advanced preparedness measures; removing or securing park property; records and utility systems; monitoring communication; and conducting rescue and salvage operations. New roadways and traffic circles would be designed so as to minimize interference with floodplains by avoiding areas within floodplains, to the extent practicable, and by adhering to NPS, local, county, and state requirements for the construction of roadways within floodplains. Thus, impacts on the site's resources would be minimized and avoided. The proposed floodplain related facilities upgrades that would occur under the Preferred Alternative (discussed above) would also support reduced flood risk and reduced potential for inundation of facilities during flood events, as compared to the No Action Alternative.

Site-Specific Mitigation – No Subsequent Statement of Findings Necessary

Merced River above Nevada Fall: High Sierra Camp Reduction to 11 Units.

- Plans would be made for timely and safe evacuation of people the remaining units in times of rising water. These areas would be evacuated prior to major storm events that could potentially produce flooding, based on ongoing monitoring within the Park. Therefore, risks to humans would be mitigated by monitoring of storm or potential storm conditions, warning, and evacuation as warranted.

- In order to minimize potential damage to facilities located within the floodplain, prior to an anticipated flood event, removable facilities that could be damaged by flooding would be removed and stored outside of the floodplain.

- No mitigation is available to offset the potential minor effects of these facilities on floodplain hydrology during flooding events; however, associated effects would be minor.

Yosemite Valley: Ahwahnee Row Houses, Tecoya Dorms, Yosemite Lodge and parking, Housekeeping Camp Lodging Units, and Other Campgrounds (North Pines, Backpackers, Lower Pines, Yellow Pine Administrative Campground,and Upper River Campground), and theYosemite Village Day-use Parking Area

- Plans would be made for timely and safe evacuation of people from the Ahwahnee Row houses, Tecoya Dorm/Ahwahnee Row Housing, Yosemite Lodge, Housekeeping Camp, affected campgrounds, and other affected facilities in times of rising water. These areas would be evacuated prior to or during the early phases of major storm events that could potentially

produce flooding, based on ongoing monitoring within the Park. Therefore, risks to humans would be mitigated by monitoring of storm or potential storm conditions, warning, and evacuation as warranted. Given that flooding within Yosemite Valley occurs with at least 24 hours of warning, these facilities could be easily evacuated in the event of an anticipated flood.

- In order to minimize potential damage to facilities located within the floodplain, prior to an anticipated flood event, removable facilities that could be damaged by flooding would be removed and stored outside of the floodplain.

- No mitigation is available to offset the potential minor effects of these facilities on floodplain hydrology during flooding events; however, associated effects would be minor.

Merced River Gorge and El Portal Watershed: Water valve station, El Portal Market building, Nature Bridge buildings, El Portal gas station.

- Plans would be made for timely and safe evacuation of people from the El Portal Market building the Nature Bridge buildings, the fuel storage facility, and gas station. The pump station is unmanned, and therefore evacuation of the pump station would not be required. These areas would be evacuated prior to or during the early phases of major storm events that could potentially produce flooding within the area, based on ongoing monitoring within the Park. Therefore, risks to humans would be mitigated by monitoring of storm or potential storm conditions, warning, and evacuation as warranted. Evacuation would be facilitated by the very close proximity of roadways and other facilities that are located outside of the floodplain. Thus, these facilities could be easily evacuated in the event of an anticipated flood.

- In order to minimize potential damage to facilities located within the floodplain, prior to an anticipated flood event, any removable facilities that could be damaged by flooding would be removed and stored outside of the floodplain. Minor and localized armoring may also be installed so as to minimize potential damage from debris and floodwaters. Residual flood damage would require intermittent minor repairs to the affected facilities.

- No mitigation is available to offset the potential minor effects of these facilities on floodplain hydrology during flooding events; however, associated effects would be minor

South Fork Merced River: Yosemite Transportation Company office, two cabins, historic jail, utility buildings, Ranger Station, and a bakery building

- Plans would be made for timely and safe evacuation of people from these facilities in times of rising water. These areas would be evacuated prior to or during the early phases of major storm events that could potentially produce flooding, based on ongoing monitoring within the Park. Therefore, risks to humans would be mitigated by monitoring of storm or potential storm conditions, warning, and evacuation as warranted. Given that flooding within the vicinity of Wawona occurs with at least 24 hours of warning, and that areas suitable for evacuation are located in the adjacent areas of Wawona, these facilities could be easily evacuated in the event of an anticipated flood.

- In order to minimize potential damage to facilities located within the floodplain, prior to an anticipated flood event, any removable facilities that could be damaged by flooding would be removed and stored outside of the floodplain. Minor and localized armoring may be also

installed so as to minimize potential damage from debris and floodwaters. Residual flood damage would require intermittent minor repairs to the affected facilities.

- No mitigation is available to offset the potential minor effects of these facilities on floodplain hydrology during flooding events; however, associated effects would be minor.

Site-Specific Mitigation – Subsequent Statement of Findings Necessary

None Warranted

CONCLUSION

The Preferred Alternative would substantially reduce potentially hazardous conditions associated with flooding by removing existing campground sites within 100-feet of the ordinary high water mark. Facilities that would be removed from highly flood-prone areas include lodging units at Housekeeping Camp, abandoned infrastructure at Upper and Lower River Campgrounds, and removal of campsites at Backpackers Camp, Lower Pines, and North Pines Campground. The Preferred Alternative would also prohibit new development within 150 feet of the ordinary high water mark of the Merced River. The Preferred Alternative would also involve removal of housing units at the Yosemite Lodge which are currently located within the floodplain. Removal of these facilities from the vicinity of the ordinary high water mark and/or the floodplain would reduce existing effects of these facilities on floodplain hydrology, and would support increased safety and reduced flood related hazards for park employees and visitors.

The Preferred Alternative would also include removal and mitigation of existing obstructions along the river, including Sugar Pine Bridge, Odger's Fuel Storage Facility, and the Old Wastewater Treatment Plant in El Portal. Channel complexity would be substantially improved in Yosemite Valley and thereby lessen existing floodplain effects of other existing bridges. These changes would also support minimization of existing floodplain and flooding effects along the Merced River. Installation of logs and logjams along the Merced River could result in minor increases in flooding in select localized areas; however, such effects are anticipated to be minimal and locally beneficial.

The National Park Service has determined that the following structures must remain within the regulatory floodplain (no practicable alternatives to this action): Yosemite Valley: Ahwahnee Row and Tecoya Dorm housing, Yosemite Lodge facilities that are located within the floodplain, Housekeeping Camp, and campgrounds including North Pines, Backpackers, and Lower Pines; Merced River Gorge and El Portal Watershed: water valve station, El Portal Market building, and Nature Bridge buildings; South Fork Merced River: Yosemite Transportation Company office, two cabins, historic jail, utility buildings, Ranger Station, and a bakery building. These facilities are not within areas subject to frequent flooding, and with the early warning system and evacuation plan in use, the risk to human safety would be minimized.

The National Park Service concludes that the Preferred Alternative would reduce the impacts of potentially hazardous conditions associated with flooding in the study area. Implementation of the proposed actions along with compliance with regulations and policies to prevent impacts to floodplain

values and loss of property or human life would be strictly adhered to during and after the construction. Individual permits with other federal and cooperating state and local agencies would be obtained prior to construction activities. No long-term adverse impacts would occur from the proposed actions. Therefore, the National Park Service finds the Preferred Alternative to be acceptable under Executive Order 11988 for the protection of floodplains.

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FLOODPLAIN STATEMENT OF FINDINGS
Merced River Draft Environmental Impact Statement
Yosemite National Park
California

Recommended: _____
Superintendent, Yosemite National Park Date

Concurred: _____
Chief, Water Resources Division Date

Concurred: _____
Regional Safety Officer, Pacific West Region Date

The above signatures certify that this document is technically adequate and consistent with NPS policy.

Approved: _____
Director, Pacific West Region Date

APPENDIX E

PROPOSED RESTORATION ACTIONS

APPENDIX E

ECOLOGICAL RESTORATION ACTIONS WITHIN THE MERCED RIVER WILD AND SCENIC RIVER CORRIDOR

INTRODUCTION

This report presents an ecological restoration plan to support the Merced Wild and Scenic River Comprehensive Management Plan (Merced River Plan). It provides a description of sites recommended for ecological restoration. The following restoration actions protect and enhance the biological, hydrologic/geologic and cultural Outstandingly Remarkable Values (ORVs) as well as free-flowing condition and water quality, collectively referred to as River Values in the Merced River Plan. The Scenic ORVs are addressed in a separate appendix on scenic vista management actions (Appendix I). A detailed map series showing the locations and types of restoration actions proposed follows this *Proposed Restoration Actions Appendix*. Chapter 5 of the Merced River Plan describes these River Values and provides background information pertaining to the justification for the work described in this appendix.

The Biological ORV actions cover meadow and riparian habitat. These habitats are sites of exceptional ecological importance and occupy the ecotone between terrestrial and aquatic ecosystems (Mitsch and Gosselink 2007). These habitats are integral to a healthy riverine ecosystem and are connected to the river through the active floodplain. When the floodplain becomes inundated during spring snow melt, soils become saturated, nutrients are redistributed and wetland and riparian plants adapted to this dynamic environment thrive. The wide range of hydrologic conditions in this zone leads to diverse plant communities that provide food and shelter for wildlife along the river. Although riparian and meadow ecosystems occupy relatively little land area in Yosemite National Park, they comprise the most biologically diverse areas and are priorities for ecological restoration (Hall 1997). While highly productive and diverse, riparian and aquatic systems (including meadows) are the most impacted areas in the Sierra Nevada (SNEP 1996) and declining spatial extent and condition of riparian and wet meadow ecosystems is occurring throughout California at an alarming rate (SNEP 1996).

The Hydrologic/Geologic ORV actions describe ways of protecting and enhancing the meandering alluvial river system. Due to systematic removal of large wood from the channel, loss of riparian vegetation and subsequent bank erosion caused by visitor use, portions of the Merced River channel lack complexity and have become wider and shallower than would naturally occur in an alluvial system. This alters the connectivity of the river to the floodplain, sediment transport dynamics and the meadows and riparian communities that occupy these areas. The actions in this plan call for the restoration of the integral large wood component of the alluvial system, and for comprehensive riverbank restoration.

The free-flowing condition actions describe the removal of impediments to free-flow such as, riprap, revetment, bridges and other infrastructure within the bed and banks of the Merced River, as well as the associated revegetation work. Impediments to free-flow may not always be removed, because they

are necessary to protect important infrastructure. In such instances, this appendix outlines a strategy for improving the river channel complexity surrounding these impediments.

The water quality actions describe ways to reduce the amount of sediment and chemicals potentially reaching the river. While water quality is considered excellent in Yosemite's portion of the Merced River, protective measures would only enhance the Park's ability to maintain this high standard of quality. Protective measures may include reducing the amount of sediment that enters the river from erosion stemming from formal and informal trails and campsites, and removing parking in close proximity to the river.

The Cultural ORV actions include actions to protect and enhance both cultural and ethnographic resources. While seemingly natural to most, the landscape of Yosemite Valley is shaped by both natural and cultural processes. Many of the meadow and riparian species comprising the ethnographic resources are important in the history and ongoing cultural traditions of traditionally associated American Indian tribes and groups. While natural hydrologic processes have shaped the meadow complexes of the Merced River, cultural processes including American Indian burning to promote hunting and gathering have shaped the plant communities. Vista clearing to maintain views of Yosemite's iconic scenery of Yosemite Valley have contributed to the landscape as well. The International Primer on Ecological Restoration (SER 2004) acknowledges the conundrum that can take place on a landscape where natural and cultural processes have shaped the landscape, stating that – "...cultural landscapes or ecosystems have developed under the joint influence of natural processes and human-imposed organization." These systems are interconnected and interrelated. Therefore, a suite of interconnected actions that address both ecological and cultural landscape processes are presented in this appendix.

This restoration plan also addresses actions to protect archeological sites, some of the many types of important tangible resources reflecting thousands of years of cultural connections to the Merced River landscape. Archeological resources are non-renewable, and once they are gone, they are lost forever. While they cannot be restored, they can often be protected and their condition stabilized through certain management actions, such as removing informal and formal trails, campsites, rock rings and graffiti from within the site boundary. Through these means, the interconnected landscape of cultural and natural resources can continue to form touchstones for place-based human history.

The Need for Ecological Restoration

The actions described in this plan are, at times, difficult to tease apart with regards to which river value they protect and enhance. For example, removal of riprap and subsequent revegetation would benefit free-flowing condition, water quality, biological, hydrologic/geologic and cultural river values. As described above, both natural and cultural resources are integral to the ecosystem processes that now exist on the landscape. This appendix uses the term ecological restoration to describe actions that protect and enhance river values.

Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability (SER 2004). The overarching goal of

ecological restoration is not to return to a particular point in time but rather to restore ecosystem processes, structure, and composition (Falk et al. 2006).

This plan identifies ecological restoration actions that involve restoring hydrological processes and the reintroduction of fire back into the ecosystem, where possible (Madej et al. 1991, Cooper and Wolf 2008). In the river corridor, particularly in Yosemite Valley, the need for ecological restoration is apparent due to impacts to meadow function (fragmentation, trampling, and conifer encroachment), decreased meadow size, reduction in the health of California black oak communities, and loss of riparian habitat due to disruptions in both hydrological processes and cultural processes such as the cessation of burning by American Indians. These natural and cultural processes have been hindered by water diversions (such as ditches), channelization (bridges and riprap), road and bridge building, roadside parking, removal of large wood from the river channel, trampling of riverbanks and meadows, introduction of invasive plants and limited opportunities to reintroduce fire on the landscape. These actions have led to changes in hydrologic regime, channelization, river widening, decreased vegetation structural complexity and diversity, a reduction in the extent of meadows, and reduction in habitat quality.

This plan identifies both passive and active ecological restoration actions to restore these natural and cultural processes. Passive restoration actions include fencing and signing sensitive areas. They are intended to halt human impacts and allow natural processes to repair damage. Active restoration actions include brush layering, revegetation, prescribed burning, removal of abandoned infrastructure, placement of large woody debris, road removal, and removal of formal and informal trails in sensitive areas. These actions are intended to stabilize riverbanks, accelerate ecosystem recovery and promote diversity of meadow and riparian habitats, the health of ethnographic resources, and reduction in conifer encroachment in meadows.

OVERARCHING GOAL

Promote the ability of the Merced River to shape the landscape by reducing impediments to free flow, improving geologic/hydrologic processes, restoring floodplains and meadows, and protecting water quality.

ECOLOGICAL RESTORATION GOALS

Ecological restoration addresses the National Park Service mission to allow natural processes to prevail, as well as protecting scenery and historic resources; it also addresses the goals of the Wild and Scenic Rivers Act by enhancing river free-flow, water quality and physical and ecological outstandingly remarkable values. Ecological restoration actions in riparian, riverine, and meadow habitats enhance the open, scenic quality which provides a sense of place for reflection and inspiration.

In addition to the overarching goal noted above, the following are specific goals of this restoration plan:

- Restore hydrologic function and connectivity with the floodplain including meadow and wetland habitats.
- Restore overbank flooding frequency by narrowing widened channels
- Repair eroded riverbanks, restore riparian plant communities and prevent further human-caused, erosion-induced widening.
- Improve hydrologic conditions at severely restricted bridges
- 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, ethnobotanical resources and wildlife habitat.
- Protect and enhance the scenic values of meadows and riparian areas, while improving visitor experience
- Protect archeological resources

ECOLOGICAL RESTORATION ACTIONS COMMON TO ALTERNATIVES 2-6 ("ACTION ALTERNATIVES")

Multiple actions would be taken across all alternatives to restore, protect and enhance hydrologic and ecological processes, free-flowing condition, water quality, and meadows and riparian habitat. A 150 foot riparian buffer, measured from the ordinary high water mark, would be protected and enhanced, corridorwide. This riparian buffer will filter runoff and provide a transition zone between the river and human land use. This riparian buffer will reduce the magnitude and velocity of overland flow, trap sediment, and attenuate compounds such as nitrogen and phosphorous and pathogens. It will help to stabilize riverbanks through provision of root cohesion on banks and floodplains, reduce erosion, and allow surface water to infiltrate the soil. The riparian buffer vegetation will provide a source of large wood to the river and adjacent floodplain, which will dissipate river flow energy and regulate channel form. In terms of habitat, the riparian buffer will enhance important habitat for wildlife by allowing establishment of new vegetation and persistence of a complex habitat structure. The buffer will also protect aquatic ecosystems by providing organic nutrients, by supplying woody debris that will improve habitat complexity, and by moderating water temperatures by vegetative shading of the river. This riparian buffer will protect and enhance river values, and function as a setback for all future development in the corridor.

Throughout the corridor, eroded riverbanks would be repaired through restoration and vulnerable riverbanks and riparian vegetation would be protected from trampling. Visitors would be directed to use resilient riverbanks such as low-angle sandbar beaches. The majority of riprap in Yosemite Valley would be removed to enhance free-flowing condition, natural hydrologic processes and to improve riparian habitat. The large wood management policy would be enforced and large wood would be left in the channel or incorporated into riverbanks as part of restoration to increase channel complexity and improve aquatic habitat. Please refer to *Standard Operating Procedure (SOP): Management of Fallen Trees in the Merced River in Yosemite Valley*, NPS, 2012, for additional detail.

Prescribed burning, conifer seedling removal and invasive plant removal are on-going 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. Prioritization of units to be burned would be developed using an interdisciplinary approach that addresses not only ecological restoration, but also ethnographic resource restoration or protection. Invasive plant removal would follow the guidelines of the *Invasive Plant Management Plan*.

In 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 meadow area and protect meadows from informal trailing. All action alternatives return ecological and cultural processes—hydrology and fire—to restore meadows and oak woodlands from currently conifer-dominated portions of the landscape. To improve riverbank condition, river channel restoration would occur in the reach between Clark's and Sentinel bridges, including placement of constructed log jams (CLJs), closure of sensitive riverbanks, and brush layering. The 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 which would enhance riparian and floodplain habitat. To protect water quality and improve riparian habitat, the pack stock trail between the stables and Happy Isles road bridge would be removed and the riparian zone and 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.

Best management practices and mitigations to protect and enhance river values would be common to all alternatives (Appendix D). Restoration actions that address riprap, informal trails, ditching, and abandoned infrastructure would also be common to all alternatives. Some actions to address free flowing conditions and hydrologic processes that are common to all include large wood management, placement of constructed log jams, and other actions to restore eroded riverbanks and provide appropriate river access. Recreational river activity would be directed to designated river access points and all new development would be located at least 150 feet from the ordinary high water mark. The NPS would eliminate unnecessary development and limit the extend of new development in the river corridor, preserve viewpoints and scenic vistas along roadways and trails, and manage vegetation so that it does not interfere with the visitor's visual experience.

Cultural resources such as archeological sites are non-renewable therefore impacts can result in irretrievable loss. For this reason, most actions to protect and enhance archeological resources in the action alternatives of this plan do not have a range across the alternatives.

All Wild and Scenic River Segments

Riparian Buffer (RES-AS-005) – Protect the riparian zone from new development within 150feet 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 (RES-AS-001) – 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 map series at the end of this *Proposed Restoration Actions Appendix*, for known locations. Where infrastructure would be removed or relocated and restored to natural conditions, soils would be decompacted and recontoured, and the area revegetated with appropriate native plants.

Informal Trails (RES-AS-002) – Six miles of informal trailing through meadows would be removed and restored to natural conditions. Fencing and signage would 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 decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.

Conifer Encroachment (RES-AS-003) – Manually or mechanically remove conifer seedlings and saplings from meadows and under oaks with loppers, handsaws, or mowers.

Restore eroded riverbanks (RES-AS-004) – Revegetate 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 (RES-AS-006) – Direct visitor use along the river to stable and resilient access points such as sandy beaches and low-angle slopes through 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 revegetation techniques.

Bridges and associated revetments (RES-AS-008) – 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 reintroduces habitat complexity within the channel by creating additional bars and scour holes, and by providing cover for aquatic organisms When used in conjunction with a wood retention policy and riverbank revegetation, log jams form part of a comprehensive restoration and mitigation strategy designed to improve the hydrologic function of the Merced River.

Revetments (RES-AS-009) – 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.

Large wood (RES-AS-010) – Manage large wood according to a management policy, *Standard Operating Procedure (SOP): Management of Fallen Trees in the Merced River in Yosemite Valley,* NPS, 2012, 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 through sensitive habitat (NO CODE) – Re-route trails out of sensitive habitats or install boardwalks through wetlands. New trail routes should avoid wetlands and special status habitat.

Segment 1

Special status plants: trail impacts (RES-1-004) – Relocate sections of trail through wetlands in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. 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. Hand tools will be used by trail and restoration crews during the late summer and fall and work will occur for up to eight weeks.

Triple Peak Fork: braided trail through meadows (RES-1-005) – Reroute the trail to upland area where possible Hand tools will be used by trail and restoration crews during the late summer and fall and work will occur for up to eight weeks.

Merced Lake Shore Meadow: informal trails (RES-1-003) – Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants Hand tools will be used by trail and restoration crews during the late summer and fall and work will occur for up to eight weeks.

Segment 2

Ditching in Meadows (RES-2-001) – Fill 2,155 ' of ditches not serving current operational needs using adjacent berm material or pond and plug techniques. (see Map Series for precise locations). A mini excavator, skid steer, dozer, dump truck, and loader would be used when water table is low, in the fall season. Work would last up to 8 weeks.

Road improvements over meadows (RES-2-017) – 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. Work would occur any time after peak flow when the area is not flooded. Heavy equipment including a skid steer, excavator, loader, and dump truck and would take an estimated 6 weeks.

Informal trails (RES-2-012): Remove and restore six miles of informal trailing through meadows to natural conditions (Figure 1; map series). 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 decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Work would occur for up to 6 weeks in the summer and fall.

Figure 1: 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 (RES-2-002) – 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 re-design 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 (RES-AS-007) – Under all alternatives, 3,400 feet of riprap would be removed and revegetated with riparian species where needed. An additional 2,300 feet would be removed but replaced with bioengineered riverbank stabilization (see map series for precise locations). Work would occur in late summer or fall during low flow. Heavy equipment including a skid steer, excavator, loader, and dump truck and would take an estimated 16 weeks.

Leidig Meadow: Bike Path (RES-2-015) – Replace a 1,000 foot section of paved trail that passes through the ordinary high water mark. Heavy equipment (excavator, skid steer, loader, dump truck) would remove asphalt path, fill material, and any plant salvage needed. Work would be done in late summer or fall for approximately six weeks.

Valley Loop Trail: delineation and river access (RES-2-029) – Reconstruct trail and designate river access, such as at 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 ends. Work would occur in summer or fall. Heavy equipment including a skid steer, excavator, loader, and dump truck and would take an estimated 4 weeks.

Roadbridge at Happy Isles: free flowing condition (RES-2-058) – Place large wood in the channel and riverbank to lessen the scouring from the bridge. Use brush layering and place a constructed log jam. Heavy equipment including a skid steer, excavator, loader, and dump truck. Work would be done in late summer or fall for approximately six weeks.

Sentinel Bridge: free flowing condition (RES-2-059) – Place large wood in the channel and riverbank to lessen the scouring from the bridge. Use brush layering and place a constructed log jam. Work would be done in late summer or fall for approximately six weeks. Heavy equipment including a skid steer, excavator, loader, and dump truck would be used during late summer and fall.

Swinging Bridge: free flowing condition (RES-2-060) – Place large wood in the channel and riverbank to lessen the scouring from the bridge. Use brush layering and place a constructed log jam. Work would occur in late summer and fall and last 3 weeks. Heavy equipment including a skid steer, excavator, loader, and dump truck would be used during late summer and fall.

Superintendent's Bridge, footbidge, and associated revetments (RES-2-160) – Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function. Work would be done in late summer or fall for approximately six weeks. Heavy equipment including a skid steer, excavator, loader, and dump truck would be used during late summer and fall.

Clark's Bridge: free flowing condition (RES-2-054) – 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. Heavy equipment including a skid steer, excavator, loader, and dump truck would be used and would take an estimated 6 weeks during the late summer or fall.

Pack stock trail from concessioner stables to Happy Isles (RES-2-143) – Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed (Figure 2). Work would occur any time after peak flow when the area is not flooded. Heavy equipment including a skid steer, excavator, loader, and dump truck and would take an estimated 6 weeks, and revegetation would require an additional two weeks.

Figure 2: 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 (Figure 3). 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 than currently established vegetation using a hydro drill. This project would be implemented in the fall during low flow conditions with duration of up to six weeks. Excavator, skid steer, loader, and dump truck would be used during late summer and fall.

Figure 3: 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 (ONA-2-007) – Remove Lower Pine Loop between sites 60 and 62, because it is within the bed and banks of the river. Work would occur any time after peak flow and when the area is not flooded. Revegetation would occur in late summer or fall and take 2 weeks. Heavy equipment including a skid steer, excavator, loader, and dump truck would be used during late summer and fall.

River reach between Clark's and Sentinel Bridges: highly impacted riverbanks (RES-2-062) – 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 that follows this *Proposed Restoration Actions Appendix*. 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 in 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 revegetation of the bank. Heavy equipment such as excavator, dozer, loader, and skid steer would be used to place and secure large wood. Work would occur in the fall during low flow and last for up to twelve weeks. Heavy equipment would access the riverbank from nearby roads, paved bike paths, and former campgrounds with already compacted soils and would not pass through wetlands.

Swinging Bridge River Access (RES-2-155) – Remove river access upstream, river-right of Swinging Bridge. Add fencing along bike trail to connect to bridge and revegetate 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 4). Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would take place in late summer or fall for 4 weeks.

Figure 4: Current river access point at Swinging Bridge (left) leads to 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 (RES-2-031) – Redesign the picnic area to better manage visitor use, and designate the area as a formal river access point, fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation. Crews would work for four weeks in late summer and fall.

Indian Creek drainage (RES-2-007) – 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. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would take place in late summer or fall for 4 weeks.

El Capitan Meadow (RES-2-009) – Reroute 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 encroaching conifer saplings (< 10 inches diameter at breast height) using loppers, handsaws, or mowers. Heavy equipment including excavator, skid steer, loader, and dump truck would be used to remove ditches and recontour natural topography. Work would take place in late summer or fall for 10 weeks.Other restoration treatments at El Capitan Meadow vary depending on alternative.

Sentinel Beach Picnic Area to El Capitan Moraine: Channel complexity (RES-2-061) – 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. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would take place in late summer or fall for 4 weeks.

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 revegetate. A mini excavator, skid steer, dump truck, and loader would be used when water table is low, in the fall, for eight weeks.

Bridalveil Meadow: stream headcutting and absence of willows (RES-2-010) – Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Reestablish the riparian shrub layer. Manually remove encroaching conifer saplings with loppers, hand saws, or mowers. Restoration would require four weeks crew time, with planting occurring in fall when willow are heading into dormancy or prior to bud swell in the springtime.

Cook's Meadow roadbed: abandoned infrastructure (RES-2-011) – Remove fill of a former road bed north of Northside Drive between the Ranger Club and the three-way stop. Revegetate with native meadow species. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.

Cook's Meadow: Informal shoulder parking (RES-2-012) – Roadside parking along meadow (along both Northside Drive and Sentinel Drive) would be removed and the area restored to meadow conditions (Figure 5). Remove approximately 1,800 cubic feet of fill and revegetate with native seed and transplanted native plants. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used. Work would take six weeks in the late summer or fall.

Figure 5: 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 (RES-2-013) – Remove informal trails that incise or fragment meadow habitat. Decompact soils and revegetate trampled areas with seed collected from local native meadow plants. Work would occur in late summer or fall over a period of six weeks and a skid steer may be used along with hand tools.

Rocky Point Sewage Plant: abandoned infrastructure (RES-2-014) – 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 (55 feet x 78 feet) and remaining asphalt left from the demolition of the concrete sludge drying bed, and 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. This is a phased project with demolition and removal of abandoned infrastructure taking 12 weeks, fill removal, contouring and planting four weeks. Heavy equipment would be used including excavator, loader, dozer, dump truck, and skid steer. Project would be implemented after peak flooding; summer or fall.

Royal Arches Meadow: abandoned infrastructure (RES-2-016) – Remove abandoned tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used. Work would last eight weeks in the late summer and fall.

Sentinel Meadow: Trampling (RES-2-018) – 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 north section of the boardwalk. Work would be accomplished in six weeks using a skid steer.

Western portion of former Lower Pines Campground loop: abandoned infrastructure (RES-2-019) – Restore 20 acres of the former Lower Pines campground to natural conditions. Remove any remaining asphalt (Figure 6) and decompact soils of former roadbed and campsite footprint using an excavator and loader. Treat invasive plants (velvet grass). 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 maps as a guide. This work would occur over 12 weeks during summer months using heavy equipment including: excavator, dozer, skid steer, loader, dozer, and dump truck.

Figure 6: Asphalt remains in former Lower Pines Campground floodplain.

Devil's Elbow: riverbank erosion (RES-2-020) – 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 decompaction and revegetation. Designate river access with appropriate signage. This work would occur up to 12 weeks during summer months using heavy equipment including: excavator, dozer, skid steer, loader, dozer, and dump truck.

Eagle creek drainage: channelization (RES-2-025) – Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used. Work would last eight weeks in the late summer and fall.

El Capitan Bridge: River access (RES-2-026) – Redirect visitors accessing the river near El Capitan Bridge to sandbars. Fence and revegetate eroded areas. This would occur in the summer and /or fall seasons and take two weeks for crew and equipment such as the skid steer.

Swinging Bridge: Riparian impacts (RES-2-027) – Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high watermark to reduce soil erosion. Fence off sensitive areas and reestablish riparian vegetation. Revegetate 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. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used. Work would last eight weeks in the late summer and fall.

Valley Swinging Bridge river access (RES-2-155) – Remove river access upstream, river-right of Swinging Bridge. Add fencing along bike trail to connect to bridge and revegetate 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 4). A skid steer would be used and fencing constructed in two weeks time and could occur anytime of the year. Revegetation would occur in fall for a period of two weeks.

Valley Campgrounds: River Access (RES-2-028) – 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 7). Fence off vulnerable steep slope and provide signs directing visitors to current access. This would occur in the summer or fall and require four weeks of crew time with the use of a skid steer.

Figure 7: 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 volunteer center abandoned infrastructure (RES-2-030) – Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins, and Wellness Center located in the western portion of the Lodge complex (those that were damaged by the 1997 flood and subsequently removed). Remove fill, decompact soils and plant riparian plant species. Restoration of this area would be completed at low river flow and would require eight weeks of crew time. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used.

Sentinel Beach Picnic Area: Riparian impacts (RES-2-031) – 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. Restoration of this area would be completed at low river flow during summer and fall and would require eight weeks of crew time. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used.

Bridalveil Sewer Plant (RES-2-050) – 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 revegetate with native plants. Remove pipe leading to Black Springs. This work would take place in late summer and fall and would include the use of heavy equipment such as excavator, dozer, skid steer, dump truck, and loader. This work would take place for two seasons for up to eight weeks each year.

Footings at the former Happy Isles footbridge (beyond gage): free flowing condition (RES-2-056) – Remove former Happy Isles footbridge footings and former river gage base (steel re-enforced concrete and wet and dry wall masonry).Revegetate denuded areas and improve way-finding between Happy Isles and the Mist Trail from the shuttle stop. Break concrete and masonry into movable pieces using an excavator-mounted jackhammer. Move material offsite with front-end loaders and dump trucks. Recontour and decompact soils and plant appropriate riparian vegetation in all denuded areas. Work would be performed by a contractor at low flow, in the fall, and would take four weeks.

Pohono Bridge: Infrastructure within the bed and banks (RES-2-057) – Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas. Work would occur for one week in the fall and include the use of heavy equipment such as an excavator, dump truck, loader, and skid steer.

Clarks Bridge to El Capitan Bridge: Large Woody Debris management (RES-2-063) –Manage large wood according to the management plan, *Standard Operating Procedure (SOP): Management of Fallen Trees in the Merced River in Yosemite Valley*, NPS, 2012. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood near bridges.

Upper Pines: recreational vehicle dump station (RES-2-144) – Relocate the recreational vehicle dump station from its site proximate to the river to a site between Curry parking and the campgrounds entrance (see Map Series 1). Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used.

Cathedral Beach: picnic area (RES-2-145) – 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, decompact soils, plant appropriate native vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, and revegetate. Work can occur any time after peak flow in the upland areas and during low flow of late summer or fall where the water table remains high. Four weeks of crew and equipment time would be needed. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used.

Yosemite Lodge: Beach Access (RES-2-149) – Direct visitors to the sandbar at Swinging Bridge. Fence the riparian area at Yosemite Lodge. Fence construction directing use from the Lodge to Swinging Bridge would take one week with the use of a skid steer.

Ahwahnee Meadow: Former golf course and tennis court (RES-2-151) – 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 revegetating with native meadow vegetation. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.65 acres to meadow habitat. Heavy equipment including excavator, dozer, skid steer, loader, dozer, and dump truck would be used.

Ethnographic ORV: Impacts to traditionally used plant populations (RES-2-045) – The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.

Pohono Bridge to Big Oak Flat Road Junction: River Access (RES-2-065) – Pave and formalize 5 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 towards the river and associated resource damage. Completely remove one pullout that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species including willow. Install drainage improvements and head walls at 11 locations. Excavator and skid steer may be used over a period of eight weeks during low water in the fall.

CA-MRP-0046/47/74 (RES-2-032) – Reroute stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.

CA-MRP-0052/H (RES-2-033) – Delineate or reroute bridle path away from site.

CA-MRP-0055/H (RES-2-034) – Remove informal trails and parking pullout. Increase law enforcement and archeology monitoring to protect rock shelter/rock art (best management practices).

CA-MRP-0057 (RES-2-036) – Remove graffiti in rock shelter and remove informal trails. Increase law enforcement and monitoring of rock shelter (best management practices).

CA-MRP-0062 (RES-2-037) – Remove the logs, graffiti, and informal trails and ecologically restore to natural conditions. Relocate the parking area away from the site.

CA-MRP-0076 (RES-2-038) – Remove informal trails, restore to natural condition, and prohibit climbing.

CA-MRP-0080 (RES-2-039) - Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.

CA-MRP-0082/H (RES-2-040) – Remove climbing bolts from rockshelter boulder and prohibit climbing. Increase interpretation, education, and outreach efforts for climbers (best management practices).

CA-MRP-0158/309 (RES-2-041) – Remove informal trails, restore to natural condition, and prohibit climbing on rock art boulder. Increase interpretation, education, and outreach effort for climbers (best management practices).

CA-MRP-0190/191 (RES-2-042) – Delineate trail/bike path to limit shoulder access within site.

CA-MRP-0240/303/H (RES-2-043) – Fence off/close access to milling feature next to trail.

CA-MRP-0902/H (RES-2-152) – Remove informal trails and restore to natural condition.

Segment 3

Cascades picnic area: abandoned infrastructure (RES-3-001) – Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock with skid steer and dump truck. Work would take three weeks in late summer or fall.

Segment 4

Old El Portal: Soil compaction around Valley oaks from parking (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline. Designate oak recruitment areas in the Odger's fuel storage area (to be removed from the river corridor in Alternatives 2-6) and the parking lots adjacent to this area. Prohibit new building construction within the oak recruitment area. Remove non-native fill and decompact soils (after development removal); plant appropriate native understory plant species; treat invasive plants. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

El Portal: river confined by rip-rap and road (RES-4-006) – Develop best management practices for revetment construction and repair throughout the river corridor. 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 (RES-4-007) – Restore to natural conditions the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Trailer court: Restore 150 foot riparian buffer – Remove asphalt and imported fill to restore 9.3 acres in the 150 foot riparian buffer; recontour and plant native riparian species and oaks. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Greenmeyer sandpit: flood and riparian plant impacts from fill material (RES-4-005) – Restore hydrologic function to 1.8 acres of floodplain and re-establish riparian habitat (Figure 8). Excavate 4,000 cubic feet of angular imported rock, concrete, asphalt and soil which is capping the site to return a floodplain elevation of a 20-50 year flood. Restore upland areas to natural topography, utilizing some

Figure 8: Greenmeyer Sandpit current conditions (left) and target braided channel and riparian habitat conditions (middle and right).

of the fill soils which would reduce the amount need to move off-site. Recontour 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. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. This is a twelve week project to be performed at low river flow conditions during summer and fall.

CA-MRP-0250/H (RES-4-003) – Remove informal trails and non-essential roads.

CA-MRP-0251/H (RES-4-004) – Remove informal trails.

CA-MRP-0181/H (RES-2-049) – In recognition of the high cultural significance of CA-MRP-0181/H 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.

Segment 5

CA-MRP-0218 (RES-5-001) – Remove informal trails and charcoal rings.

Segment 6

Wawona Impoundment: effects to free-flowing condition (RES-6-001) – Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.

Wawona: arch district impacts (RES-MS-001) – Increase monitoring frequency for affected sites, Increase management protection designed to counteract or minimize impacts, crafted to individual site specifications. At the district-wide level, amend National Register of Historic Places nomination to reflect district changes and impacts.

Segment 7

South Fork side channels: Abandoned infrastructure (RES-7-005) – Remove abandoned metal pipes that dewater the terrace using skid steer, excavator, dump truck and loader for one week.

Wawona Campground: septic system (RES-7-006) – 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. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Wawona dump station: proximity to river (RES-7-007) – Relocate the dump site to the Wawona Campground away from the 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. After the existing dump station is removed, revegetate the area with native plants. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately three weeks.

South Fork Wawona picnic area: river access and water quality (RES-7-008) – Delineate picnic area and a path to the river to encourage visitors to use more resilient areas. One week crew time at low flow would be needed.

Wawona picnic area: river access and water quality (RES-7-009) – 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. Add path to river that encourages visitors to walk in the more resilient areas. Work would be performed for two weeks after peak water flow with an excavator and skid steer.

Wawona Maintenance yard: Riparian Impacts (FAC-7-001) – Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer. Work would be performed for two weeks after peak water flow with an excavator and skid steer.

CA-MRP-0374 (RES-7-001) – Remove informal trail, delineates access road, and reduce hazard fuels.

CA-MRP-0008/H (RES-7-002) - Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.

CA-MRP-0171172/254/516/H (RES-7-012) - Remove informal trails and shoulder and off-road parking.

CA-MRP-0168/0329/H (RES-7-003) – Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.

Wawona: arch district impacts (RES-MS-001) – Increase monitoring frequency for affected sites, Increase management protection designed to counteract or minimize impacts, crafted to individual site

specifications. At the district-wide level, amend National Register of Historic Places nomination to reflect district changes and impacts.

ECOLOGICAL RESTORATION ACTIONS WITHIN ALTERNATIVES

There is a varying degree of ecological restoration associated with the removal of infrastructure such as roads and bridges within the range of action alternatives (see Table E-1 below). In Alternative 6, all roads and bridges would be retained and their impacts on hydrology and free-flowing condition are addressed through engineered solutions such as placing culverts under roads that bisect meadows and placing engineered log jams adjacent to bridges to ameliorate scour pool formation. In Alternative 5, Sugar Pine Bridge, the bridge causing the greatest hydrologic restriction, would be removed. In Alternatives 2, 3, and 4, Sugar Pine and Ahwahnee Bridges and the berm connecting them would be removed, greatly enhancing free-flowing condition and hydrologic function of this river reach. Stoneman Bridge would be removed in addition to Sugar Pine and Ahwahnee Bridges in Alternatives 2 and 3 to further enhance free-flowing conditions. In Alternative 5, further study would be undertaken to assess the potential costs and benefits of removal of the road segment through Stoneman Meadow. No permanent structures would be built that would preclude a future reroute of this road to the south of the meadow. Alternative 4 would remove the road segment that bisects Stoneman Meadow, but retains the segment of road that bisects Ahwahnee Meadow. Alternatives 2 and 3 would remove the road through Stoneman Meadow and Ahwahnee Meadow to restore 2.7 acres of wet meadow and restore hydrologic connectivity to the meadows. Roads through other meadows such as El Capitan, Cook's and Sentinel would not be rerouted but rather improvements in the road made, such as placement of additional culverts and addition of permeable road base to better connect hydrologic flow.

TABLE E-1: AREA (ACRES) OF ECOLOGICAL RESTORATION PROPOSED AS ACTIONS COMMON TO ALL ALTERNATIVES (CTA) AND BY ALTERNATIVE (ACREAGE REPORTED IN EACH ALTERNATIVE INCLUDES ACTIONS COMMON TO ALL)

Alt	CTA	2	3	4	5	6
Meadow, Riparian and Floodplain Restoration	164	347	302	223	203	170

The site of the former Upper and Lower Rivers Campgrounds has a range of restoration options within the action alternatives. Alternatives 2 and 3 would provide for the greatest degree of ecological restoration, fully restoring the area to a mosaic of riparian, floodplain, meadow and oak woodland habitat. In these alternatives, the road bisecting the area and Ahwahnee Meadow is removed, allowing for maximum potential for the river to reshape the landscape, unimpeded. Natural topography, including side channels, would be restored to natural conditions. In Alternatives 4, 5, and 6, the road would remain and camping and day use added. The riparian buffer outside of the campground would be restored to natural conditions in Alternatives 2-6.

The greatest need for river channel restoration occurs in the vicinity of the campgrounds and Housekeeping Camp where the greatest channel widening has occurred. Because riverbanks along the

former Upper Rivers Campground are not resilient river access points, they need protection from trampling. The lower number of visitors in Alternatives 2 and 3 due to lack of road access and camping would be protective of these riverbanks. In Alternatives 4, 5, and 6, riverbanks would be closed, fenced and signed to prevent vegetation damage and riverbank erosion. River use would be directed across the road, to the large sandbar beach at Lower Rivers. In Alternatives 5 and 6, river access would also be available across from the Ahwahnee Bridge, which would remain in place under these alternatives.

Current parking at Yosemite Village Day Use Parking (Camp 6) and the Curry Orchard Parking Area are re-evaluated in this plan. There are two options within the Alternatives for restoration at Camp 6. In Alternatives 4, 5 and 6, the footprint of the current parking lot would be pulled back from the river at least 150 feet from the ordinary high water mark, allowing for riparian restoration and future protection. In Alternatives 2 and 3, all parking and roads would be moved out of the 10-year floodplain, which would allow for riparian restoration as well as restoration of the active floodplain and allow future potential for the river to reshape the land. These alternatives ecologically restore a larger portion of this dynamic floodplain area. Storm run-off mitigations would be used in all alternatives to protect water quality. Actions at the Curry Orchard Parking Area range from major ecological restoration to minimal change. In Alternatives 5 and 6, the area would remain designated parking and limited restoration would occur. In Alternative 3 and 4, most of the parking lot would remain while the northern portion would be restored to natural conditions. In Alternative 2, the parking footprint at this location remains similar to existing conditions, but areas to the north and east are restored when road segments are removed. In all alternatives, the apple trees would be removed to mitigate human-bear encounters and these areas would be revegetated with native species.

There is a range of options within the alternatives for restoring riparian and floodplain habitat at Housekeeping Camp. In Alternatives 5 and 6, 34 structures that are within the modeled ordinary high water mark are removed and riparian habitat restored. Under Alternative 4, 166 structures—those within the observed high water of 2010 and 2011—are removed, resulting in a larger area for restoration. A much larger riparian zone would be restored and channel complexity restored in the active floodplain. Day use in this area increases in this alternative and visitors would be directed to the sandbar beaches. Alternatives 2 and 3 provide for the greatest restoration opportunity with the removal of all lodging units. Riparian habitat and the 10-year floodplain would be restored allowing the greatest level of unimpeded river processes. Alternative 2 and 3 retain a restroom and a small parking lot in the highest elevations to provide for day use picnicking. In all alternatives, current access on the steep, eroding slope on the eastern side would be closed and restored and all river access directed to the sandbar on the western side or to the north side of Housekeeping Bridge.

Campsites in close proximity to the river in Wawona and Yosemite Valley are also addressed in Alternatives 2-6. In Alternatives 5 and 6, sites within 100 feet of the river are removed and riparian habitat restored. In Alternatives 3 and 4, the setback is 150 feet. All sites in the 100-year floodplain are removed and restored to natural conditions in Alternative 2. This entails removal of all of North Pines campground and full restoration of a dynamic floodplain.

At the Yosemite Lodge complex, areas west of the lodge where former lodging units were removed following damage from the 1997 flood would be restored to natural condition. This action is common to Alternatives 2-6. Much of this area is frequently flooded and supports riparian vegetation. In

Alternative 3, 4 buildings in the floodplain are removed and the area restored to natural conditions. Alternative 2 removes all infrastructure in the 100-year floodplain and restores the greatest area of floodplain habitat.

Alternative 2

This alternative was designed to restore much of the 100-year floodplain. Roads over meadows and bridges impacting free-flowing condition are removed and restored to natural conditions. This alternative includes restoration of more than 347 acres of riparian, meadows and upland habitat within the river corridor. It removes development including campsites, informal trails, and non-essential roads from sensitive areas.

Segment 1

Merced Lake Ranger Station Meadow: grazing (RES-1-002) – Remove the meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.

Segment 2

Ahwahnee Row and Tecoya Housing: 100-yr. floodplain (RES-2-007) – After removal of housing, decompact soils, recontour topography (using 1919 maps as a guide) and plant native meadow vegetation. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used for eight weeks in the late summer and fall.

Yosemite Lodge: buildings in the 100-year floodplain (RES-2-024) – Restore 28 acres of floodplain and riparian habitat after removal of all Yosemite Lodge buildings in the 100-year floodplain. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used for eight weeks in the late summer and fall.

Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent (RES-2-004) – Remove the road from Camp 6 intersection to Southside Drive to restore 0.9 acre of wet meadow and improve meadow hydrology and 0.7 acres of California black oak habitat. Remove 12,500 cubic yards of asphalt and imported fill material and recontour to natural topography and restore natural hydrology. Revegetate meadow through propagation and seeding with native meadow species. Revegetate California black oak and floodplain understory with appropriate plants. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used. Revegetate with willows, cottonwoods and other riparian species. Crews would work 12 weeks during the fall for two years.

El Capitan Meadow: bisected by road, informal trails, conifer encroachment (RES-2-009) – Remove all informal trails and areas of bare compacted soils and restore to native plan communities. Disperse and reduce roadside parking along the meadow through alternative pavement striping (approximately 30 spaces removed). Retain some roadside parking for SAR and other administrative

traffic. Use restoration fencing and signing where necessary to further protect the meadow from trampling. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately three months.

Stoneman Meadow and Orchard parking lot: Road through meadow and parking lot (RES-2-008) – Remove the road through Stoneman Meadow to restore 1.9 acres of wet meadow and improve hydrology to entire meadow. Remove 7,260 cubic yards of asphalt and imported fill material, recontour to natural topography and restore natural hydrology. Revegetate through propagation and seeding with native meadow species. Remove apple trees. Remove imported fill, decompact soils and recontour using the 1919 maps as a guide. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Revegetate with willows, cottonwoods and other riparian species. Crews would work 12 weeks during the fall for two years.

Housekeeping Camp: riparian restoration and river access (RES-2-023) – Remove all infrastructure and riprap at Housekeeping Camp and restore 16.8 acres of floodplain and riparian ecosystem to natural conditions. Convert area to day use river access (raft put-in) and picnicking. Focus river access to resilient locations. This work would be phased over the course of two seasons and would occur between midsummer and early winter, depending on weather and soil moisture. All work within the bed and banks of the river would be done at low river flow conditions. Phase 1(year 1) would take 14 weeks and would concentrate on the removal of all infrastructure including lateral utilities, concrete structures, revetment and, when hauling is complete, removal of imported fill material. Native sand and gravel fill may be retained on site. Phase 2 (year 2), would include additional grading and contouring, decompaction of soils, fence construction and planting and would take six weeks. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.

Upper and Lower Rivers Campground: abandoned infrastructure (RES-2-021) – Restore topography of 35.6 acres of impacted floodplain to support a mosaic of riparian, meadow and California black oak woodland at the former Rivers campgrounds site. Remove any remaining asphalt, decompact soils of former roads and campsites and re-establish seasonal channels and natural topography that have been graded flat. Develop a planting plan for restoring native plant communities and restoring soils to support them. Mechanically remove ponderosa pine and incense cedar saplings and mature trees that are infringing on California black oaks and growing on soils that once supported meadow communities. Revegetate with native meadow grasses, sedges, and shrubs. Plant native riparian species, such as willow, alder and cottonwood along riverbanks. Remove Lower River amphitheater structure and associated fill material. Restore natural topography to original contours and revegetate with wetland plants. Fence the revegetated areas for up to 3 years to prevent trampling of young plants and seedlings. This work would be phased over two years. Excavation of former channels and roads would generate asphalt, rock and other material not suited to the ecology of the site and would moved off-site. The excavation, grading and hauling would last ten to twelve weeks. Fencing and planting would be done in an additional three weeks. Heavy equipment including excavator, skid steer, loader, dozer, and dump truck would be used. Most if not all of this work would be completed in the late summer and fall.

Valley Campgrounds: campsites near the river (RES-2-022) – Remove all campsites and infrastructure at all sites within the 100-year floodplain and restore 25.1 acres of floodplain and

riparian habitat. This includes all sites at North Pines and Yellow Pines campgrounds, 19 sites at Backpacker's Campground, 32 sites at Lower Pines and 22 sites at Upper Pines. Remove asphalt, base rock, fill material; decompact soils, recontour and revegetate. Erect new fencing or adjust existing fencing to protect the riparian zone. Restore topography with natural drainages. Restore a mosaic of riparian, meadow, and oak habitat. Revegetate with native species. Repair eroded riverbanks with brush layering and willow planting. Remove conifer saplings. Twenty-two weeks crew and equipment time would be needed for implementation over a three year period. Work within the bed and banks of the river would occur at low river flow while work on the terrace would occur in the summer or fall. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used.

Revetment: free flowing condition (RES-2-051) – In addition to the revetment removed in the Common to All Action Alternative, remove 964 linear feet of riprap adjacent to Sugar Pine, Ahwahnee and Stoneman Bridges. Excavator, skid steer, loader, and dump truck would be used. Revegetate with willows, cottonwoods and other riparian species. Crews would work 12 weeks over two years during low flow in fall.

Stoneman Bridge: free flowing condition (RES-2-053) – Remove Stoneman Bridge, asphalt, and other imported material. Salvage native river gravel from the berm and place in cut-off channel. Salvage other native soils for use in restoration. Revegetate with riparian species. Implementation would take 10 weeks with all work except asphalt removal occurring at river low flow conditions. Excavator, skid steer, dozer, and dump truck would be used.

Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition (RES-2-052) – Remove Sugar Pine and Ahwahnee Bridges and the causeway between Sugar Pine and Ahwahnee Bridges and associated berm. Remove asphalt and other imported material. Salvage native river gravel from the berm and place in cut-off channel. Salvage other native soils for use in restoration. After bridge removal, allow channel to reconfigure on its own. Revegetate with riparian species. Implementation would take 15 weeks with all work except asphalt removal occurring at river low flow conditions. Reroute the multiple use trail to the north bank of the river. Excavator, skid steer, loader, and dump truck would be used.

Concessioner stables to Happy Isles: pack stock trail (RES-2-143) – Remove trail and restore to natural conditions (see actions common to all).

Camp 6: Water Quality, proximity to the River, and fill material within the 5-to 10-year floodplain. (RES-2146) – Restore 10.8 acres of riparian and floodplain habitats at Camp 6 up to the 10-year floodplain: remove unnatural fill identified in soil studies. Remove construction-generated boulders remaining from use as staging area. Plant riparian and wetland species appropriate to the habitat after fill removal. Allow seasonal flooding to re-work remaining topography. Revegetate eroded riverbanks and increase signage to avoid continued impacts (Figure 9). Heavy equipment including excavator, skid steer, dozer, loader, and dump truck would be used.

Figure 9: Healthy herbaceous riparian vegetation growing on the riverbank (left) contrasts with trampled and eroded riverbank adjacent the Camp 6 Day Use Parking Lot.

Valley Meadows: Valley Loop Trail impacts through meadows (RES-2-005) – Reroute trail through Slaughterhouse Meadow out of wetlands to an upland area. Move the 780 feet of the trail through Bridalveil Meadow to the toe of the fill slope of Southside Drive. Decompact, recontour and revegetate the abandoned sections of trail with native meadow species. Because trail reroute would be located in the upland, work may occur at any time of year and would take three weeks crew time. Removal of existing trail and replanting of meadow would take three weeks in the fall. Heavy equipment including excavator, skid steer, loader, dozer, and dump truck would be used.

Ahwahnee Meadow oxbows: trail impacts (RES-2-003) – Reroute the trail so it does not pass through wetlands; consolidate use with trail to Housekeeping Footbridge where possible. Remove asphalt and fill material from abandoned section of trail and revegetate with native wetland plants. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Former Yosemite Lodge cabins (Pine and Oak) area (RES-2-154) – Restore 10.9 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins (area commonly known as the Oak and Pine cabins, which were removed after being damaged by the 1997 flood). Remove riprap from Yosemite Creek and plant willows along stream bank. Remove informal trails throughout the eastern end of the lodge near Yosemite Creek and formalize one trail through the area. Delineate one service road to the well house and parking. Remove excess service roads. Remove fill, decompact soils and plant riparian plant species. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used.

Segment 4

Old El Portal: parking and development in valley oaks (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact

soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Segment 7

Wawona golf course (RES-7-004) – Remove the golf course and restore meadow ecosystem. Recontour to natural topography. Remove any imported fill material. Remove non-native plants and restore native meadow plant communities through propagation, seeding, and planting. Remove channelization of creek and restore natural hydrology. Continue to use the area as a spray field. This would occur with large heavy equipment over a three year period working three months per year. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.

Wawona Campground: campground activity near river (ONA-7-001) – Remove 32 campsites in Wawona Campground that are in the 100-year floodplain or in culturally sensitive areas to restore 8.2 acres of riparian and floodplain ecosystem. Decompact soils and plant with riparian vegetation. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month. Wawona Stock Camp (RES-7-011): Two stock use campground sites relocated from sensitive resource area to Wawona Stables. The sites will then be recontoured, soil decompacted and revegetated. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Alternative 3

This alternative provides for significant restoration within 150 feet of the river. This alternative targets restoration strategically throughout the corridor, removing infrastructure such as campsites, roads, bridges, informal and formal trails from sensitive areas. It restores targeted areas such as the 10 year floodplain near Camp 6, the former Upper and Lower Rivers Campgrounds, the 100 year floodplain at Housekeeping Camp, and the Wawona Golf Course. In total, it restores 302 acres to natural conditions within the river corridor.

Segment 1

Merced Lake Ranger Station Meadow: grazing (RES-1-002) – Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.

Segment 2

Yosemite Lodge: buildings in the 100-year floodplain (RES-2-024) – Remove 4 buildings in the 100-year floodplain and restore floodplain and riparian habitat. Heavy equipment including excavator,

skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately one month.

Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent (RES-2-004) – Same as Alternative 2.

El Capitan Meadow: bisected by road, informal trails, conifer encroachment (RES-2-009) – 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 and signing to designate appropriate meadow access points. Revegetate with native meadow species. Boardwalks would not be used as an action within this alternative. Remove ditches and restore natural hydrology. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately one month.

Stoneman Meadow and Orchard parking lot: Road through meadow and parking lot (RES-2-008) – Remove the road through Stoneman Meadow as in Alternative 2. Remove some asphalt from the Curry Orchard parking and revegetate with native plants. Remove apple trees to mitigate human-bear encounters. Remove imported fill, decompact soils and recontour where road and parking is removed. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately two months.

Housekeeping Camp: riparian restoration and river access (RES-2-023) – Remove all lodging infrastructure and riprap at Housekeeping Camp and restore 16.8 acres of floodplain and riparian ecosystem to natural conditions. Convert area to day use river access (raft put-in) and picnicking, while focusing river access to the sandbar across from Housekeeping Bridge. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately two months.

Upper and Lower Rivers Campground: abandoned infrastructure (RES-2-021) – Same as Alternative 2.

Valley Campgrounds: campsites near the river (RES-2-022) – Remove sites at Backpacker's Camp, Lower Pines and North Pines Campgrounds that are within 150' of the ordinary high water to restore 12 acres of riparian habitat (Figure 9). Remove asphalt, base rock, fill material; decompact soils, recontour and revegetate. Erect new fencing or adjust existing fencing to protect the riparian zone. Harden river access point at North Pines campground by using pinned logs back filled with native gravel. Fence sensitive areas and brush layer with willows to repair eroded riverbank and revegetate denuded areas. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Revetment: free flowing condition (RES-2-051) – In addition to actions common to all, an additional 435 linear feet of riprap would be removed and the river banks revegetated. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the fall and take approximately four months.

Stoneman Bridge: free flowing condition (RES-2-053) – Same as Alternative 2.

Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition (RES-2-052) – Same as Alternative 2.

River reach between Clark's and Sentinel Bridges: highly impacted riverbanks (RES-2-062) – Same as Alternative 2.

Concessioner stables to Happy Isles: pack stock trail (RES-2-143) – In addition to the actions described in common to all, re-route stock trail north along the road where it meets up with the Valley Loop Trail. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately one month.

Camp 6: Water Quality, proximity to the River, and fill material within the 5-to 10-year floodplain (RES-2-146) – Same as Alternative 2.

Valley Meadows: Valley Loop Trail impacts through meadows (RES-2-005) – Same as Alternative 2.

Ahwahnee Meadow oxbows: trail impacts (RES-2-003) – Same as Alternative 2.

Former Yosemite Lodge cabins (Pine and Oak) area (RES-2-154) – Restore 10.9 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins (area commonly known as the Oak and Pine cabins, which were removed after being damaged by the 1997 flood). Remove riprap from Yosemite Creek and plant willows along stream bank. Remove informal trails throughout the eastern end of the lodge near Yosemite Creek and formalize one trail through the area. Delineate one service road to the well house and parking. Remove excess service roads. Remove fill, decompact soils and plant riparian plant species. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used.

Segment 4

Old El Portal: parking and development in valley oaks (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Segment 7

Site-Specific Programmatic Wawona golf course: operating in old meadow habitat (RES-7-004) – Same as Alternative 2.

Wawona Campground: campground activity near river (ONA-7-001) – Retains 69 sites and one group site. Remove 27 sites that are either within 150 feet of the river or in culturally sensitive areas.

Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Wawona Stock Camp (RES-7-011) – Two stock use campground sites relocated from sensitive resource area to Wawona Stables. The sites will then be recontoured, soil decompacted and revegetated. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Alternative 4

In this alternative, restoration efforts are targeted at the riparian buffer and select road and bridge removal, with a total of 223 acres restored. Removal of campsites and riparian restoration within 150 feet of the bed and banks would occur. Two bridges—Ahwahnee and Sugar Pine—would be removed and the road through Stoneman meadow would be rerouted out of the meadow and the meadow extent restored. Campsites, informal trails and non-essential roads would be removed from culturally sensitive areas.

Segment 1

Merced Lake Ranger Station Meadow: grazing (RES-1-002) – Remove the Merced Lake East Meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.

Segment 2

Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent (RES-2-004) –Mitigate effects of the road and bike trail through the meadow with culverts or other engineered solutions that allow passage of underground water. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.

El Capitan Meadow: bisected by road, informal trails, conifer encroachment (RES-2-009) – 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. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years. Work would take place during summer or fall. Fencing can occur any time of the year.

Stoneman Meadow and Orchard parking lot: Road through meadow and parking lot (RES-2-008) – Remove the road through Stoneman Meadow as in Alternatives 2 and 3. Remove part of Curry Orchard parking lot to restore 3.4 acres of meadow. Remove imported fill, decompact soils and recontour using the 1919 maps as a guide. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately three months.

Housekeeping Camp: riparian restoration and river access (RES-2-023) – Remove 166 units to restore 12.2 acres of riparian zone. Provide for day use arriving via shuttle with trails to access to the large sandbars on the western edge of Housekeeping Camp and across Housekeeping Bridge. Restore natural topography and channels through the removal of fill material. Revegetate with native riparian and wetland species. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years. Work would take place during low water in the fall.

Upper and Lower Rivers Campground: abandoned infrastructure (RES-2-021) – Restore and protect 19.7 acres of the riparian zone at the former Rivers campgrounds site to a mosaic of riparian, meadow, and California black oak habitat. Fence and close the riparian zone at Upper Rivers to protect the riverbank from trampling. Mechanically remove ponderosa pine and incense cedar saplings and mature trees less than 18 inch dbh (diameter at breast height) within the restoration area that are infringing on California black oaks and growing on soils that once supported meadow communities. Revegetate with native meadow grasses, sedges, and shrubs. Plant native riparian species such as willow, alder, and cottonwood along the riverbank. Direct river access to the sandbar at Lower Rivers or to the beach across the Ahwahnee Bridge. Use signage for way finding and for interpretation of river-related natural processes. Remove any remaining abandoned asphalt, decompact soils of former roads and campsites. Restore natural contours and re-establish drainage channels that have been filled. Place large box culverts or other design components such as rolling dips, permeable sub grade, etc to improve surface water flow across roads and trails. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used over a period of up to two months for two years in the fall.

Valley Campgrounds: Remove campsites near the river (RES-2-022) – Same as Alternative 3.

Revetment: free flowing condition (RES-2-051) – Same as Alternative 3.

Stoneman Bridge: free flowing condition (RES-2-053) – Mitigate effects of bridge through engineered solutions. Place large wood to lessen the scouring from bridge. Use brush layering and place a constructed log jam. Add culverts along Northside Drive to improve drainage. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition (RES-2-052) – Remove Sugar Pine and Ahwahnee Bridges as in Alternative 2. Heavy equipment including excavator, skid steer, loader, and dump truck would be used and work would last for up to four weeks.

Concessioner stables to Happy Isles: pack stock trail (RES-2-143) – Same as Alternative 2.

Camp 6: Water Quality, proximity to the River, and fill material within the 5-to 10-year floodplain (RES-2-146) – Restore 6.1 acres in the 150 foot riparian buffer adjacent to Camp 6: remove unnatural fill as identified in soil studies. Plant native riparian species in unvegetated areas after fill removal. Allow seasonal flooding to re-work remaining topography. Revegetate eroded riverbanks, fence the riparian buffer and increase signage to avoid continued impacts (Figure 7). Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years and take place during low water in the fall.

Valley Meadows: Valley Loop Trail impacts through meadows (RES-2-005) – Same as Alternative 2.

Ahwahnee Meadow oxbows: trail impacts (RES-2-003) – In the sections of trail (350 feet) that pass through oxbows, remove the asphalt and fill and replace with a boardwalk. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Former Yosemite Lodge cabins (Pine and Oak) area (RES-2-154) – Restore 10.9 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins (area commonly known as the Oak and Pine cabins, which were removed after being damaged by the 1997 flood). Remove riprap from Yosemite Creek and plant willows along stream bank. Remove informal trails throughout the eastern end of the lodge near Yosemite Creek and formalize one trail through the area. Delineate one service road to the well house and parking. Remove excess service roads. Remove fill, decompact soils and plant riparian plant species. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used.

Segment 4

Old El Portal: parking and development in valley oaks (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, create a valley oak recruitment area of 1acre in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Segment 7

Wawona Campground: campground activity near river (ONA-7-001) – Same as Alternative 3.

Wawona Stock Camp (RES-7-011) – Two stock use campground sites relocated from sensitive resource area to Wawona Stables. The sites will then be recontoured, soil decompacted and revegetated. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during the summer or fall and take approximately one month.

Alternative 5

This alternative would restore riparian habitat along the Merced River 100 feet from the ordinary high water mark. To enhance free-flowing condition it would remove Sugar Pine Bridge and increase channel complexity below the other bridges through addition of constructed log jams and other bioengineering techniques. It restores 203 acres to natural conditions within the river corridor and includes removing campsites within 100 feet of the bed and banks and removing informal trails and

non-essential roads from sensitive areas. This alternative calls for the study of road removal through Stoneman Meadow.

Segment 1

Merced Lake Ranger Station Meadow: grazing (RES-1-002) – Same as Alternative 3.

Segment 2

Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent (RES-2-004) – Same as Alternative 4.

El Capitan Meadow: bisected by road, informal trails, conifer encroachment (RES-2-009) – 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. Selectively remove mature conifers that block views of El Capitan from the roadside. Equipment including skid steer would be used over a period of up to six weeks for two years. Fencing can occur any time of the year.

Stoneman Meadow and Orchard parking lot: Road through meadow and parking lot (RES-2-008) – Study potential for road removal through Stoneman Meadow. Remove roadside parking along Stoneman Meadows and restore to meadow conditions. Remove 1,350 cubic feet of fill, revegetate with native seed and/or transplanted native plants. Remove apple trees in Curry Orchard parking lot. For roadside parking removal, equipment work, hauling, and revegetation would take 10 weeks with work performed in the late summer or fall. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.

Housekeeping Camp: riparian restoration and river access (RES-2-023) – Remove 34 units from within the ordinary high water mark to restore 1 acre of riparian habitat (Figure 10). After removal of structures, adjust fence location to provide greater distance away from the bed and banks. Revegetate with riparian plant species. The work would be performed in the fall after the camp is closed for the season. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck may be used over a period of up to eight weeks.

Figure 10: Radiating effects from campsites lead to denuded riparian zones, as seen at this campsite at North Pines Campground. In all alternatives, campsites would be moved back at least 100' from the bed and banks of the river to provide a buffer in which a diversity of riparian vegetation can thrive.

Upper and Lower Rivers Campground: abandoned infrastructure (RES-2-021) – Same as Alternative 4.

Valley Campgrounds: campsites near the river (RES-2-022) -Remove sites at Backpacker's Camp, Lower Pines and North Pines Campgrounds that are within 100 feet of the ordinary high water to restore 6.5 acres of riparian habitat. Remove asphalt, base rock, fill material; decompact soils, recontour and revegetate. Erect new fencing or adjust existing fencing to protect the riparian zone. Harden river access point at North Pines campground. Construct a hardened surface using pinned logs back filled with native gravel. Fence sensitive areas and brush layer to repair eroded riverbank (Figure 10). Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years.

Revetment: free flowing condition (RES-2-051) – Same as Alternative 3.

Stoneman Bridge: free flowing condition (RES-2-053) – Same as Alternative 4.

Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition (RES-2-052) – Remove the Sugar Pine Bridge and berm. At the Ahwahnee Bridge, heading south toward the Lower Pines campground, connect a trail and small bridge going over the cut-off channel. Additionally, re-route the multiple use trail to the north bank of the river. Manually cut pieces of the bridge into smaller sections. Remove bridges with heavy equipment (crane lifts sections or chunks). Pontoon rafts below the bridge would catch debris. All work from the banks would use the reach from an excavator to remove chunks of bridge. Footings would be removed with excavators from the bank. The removal would occur during low flow in late summer or early fall. No work would occur after Oct. 31 due to the potential for high water events occurring. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately three months.

Concessioner stables to Happy Isles: pack stock trail (RES-2-143) – Same as Alternative 3.

Camp 6: Water Quality, proximity to the River, and fill material within the 5-to 10-year floodplain (RES-2146) – Same as Alternative 4.

Valley Meadows: Valley Loop Trail impacts through meadows (RES-2-005) – Construct boardwalks through sensitive wet meadow habitat in Slaughterhouse Meadow. Move 780 feet of the trail that runs through Bridalveil Meadow to the toe of the fill slope of Southside Drive. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years.

Ahwahnee Meadow oxbows: trail impacts (RES-2-003) – Same as Alternative 4.

Former Yosemite Lodge cabins (Pine and Oak) area (RES-2-154) – Restore 10.9 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins (area commonly known as the Oak and Pine cabins, which were removed after being damaged by the 1997 flood). Remove riprap from Yosemite Creek and plant willows along stream bank. Remove informal trails throughout the eastern end of the lodge near Yosemite Creek and formalize one trail through the area. Delineate one service road to the well house and parking. Remove excess service roads. Remove fill, decompact soils and plant riparian plant species. Heavy equipment including excavator, dozer, skid steer, loader, and dump truck would be used.

Segment 4

Old El Portal: parking and development in valley oaks (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, create a valley oak recruitment area of 1acre in Old El Portal in the vicinity of the current Odger's bulk fuel storage area, including adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Segment 7

Wawona Campground: campground activity near river (ONA-7-001) – Retains 83 sites and one group site. Remove 13 sites that are either within 100 feet of the river or in culturally sensitive areas.

Wawona Stock Camp (RES-7-011) – Two stock use campground sites relocated from sensitive resource area to another more appropriate location near the Wawona Maintenance Yard. The sites will then be re-contoured, soil decompacted and area re-vegetated. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

Alternative 6

As with Alternative 5, this alternative is characterized by having limited restoration within 100 feet of the river; removing campsites, informal trails, and non-essential roads from sensitive areas. It addresses free-flowing condition by removing approximately one mile of revetment and increasing channel complexity around the bridges through engineered solutions. The number of acres of riparian and meadow restoration is at least 170 acres, targeting the most sensitive areas.

Segment 1

Merced Lake Ranger Station Meadow: grazing (RES-1-002) – Same as Alternative 3.

Segment 2

Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent (RES-2-004) – Same as Alternative 4.

El Capitan Meadow: bisected by road, informal trails, conifer encroachment (RES-2-009) – 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. Selectively remove mature conifers that block views of El Capitan from the roadside. Equipment including skid steer would be used over a period of up to six weeks for two years. Fencing can occur any time of the year.

Stoneman Meadow and Orchard parking lot: Road through meadow and parking lot (RES-2-008) – Mitigate effects of the road through the meadow with culverts or other engineered solutions that allow passage of underground water. Remove roadside parking along Stoneman Meadow and restore the area to meadow conditions. Remove 1,350 cubic feet of fill, revegetate with native seed and/or transplanted native plants. Remove apple trees in Curry Orchard parking lot. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years in late summer and fall.

Housekeeping Camp: riparian restoration and river access (RES-2-023) – Same as Alternative 5.

Upper and Lower Rivers Campground: abandoned infrastructure (RES-2-021) – Same as Alternative 4.

Valley Campgrounds: campsites near the river (RES-2-022) – Same as Alternative 5.

Revetment: free flowing condition (RES-2-051) – An additional 348 feet of riprap south of the berm between Sugar Pine and Ahwahnee bridges would be removed and replaced with brush layering. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks in the fall during low flow.

Stoneman Bridge: free flowing condition (RES-2-053) – Same as Alternative 4.

Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition (RES-2-052) – Improve riverbank condition at Sugar Pine and Ahwahnee Bridges by increasing channel complexity through construction of engineered log jams, strategic placement of large wood, removal of rip rap, and bioengineering of the riverbank. 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. If subsequent monitoring of riparian condition reveals insufficient improvement (i.e. CRAM rating remains below 0.71) within 10 years of the implementation of these actions, more aggressive management action may be initiated, including the possible removal of Sugar Pine Bridge. Heavy equipment including excavator, skid steer, loader, and dump truck would be used over a period of up to eight weeks for two years during the fall low flow.

Concessioner stables to Happy Isles: pack stock trail (RES-2-143) – Same as Alternative 3.

Camp 6: Water Quality, proximity to the River, and fill material within the 5-to 10-year floodplain (RES-2146) – Same as Alternative 4.

Valley Meadows: Valley Loop Trail impacts through meadows (RES-2-005) – Same as Alternative 5.

Ahwahnee Meadow oxbows: trail impacts (RES-2-003) – Same as Alternative 4.

Segment 4

Old El Portal: parking and development in valley oaks (RES-4-002) – Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur in the late summer or fall and take approximately one month.

Segment 7

Wawona Campground: campground activity near river (ONA-7-001) – Same as Alternative 5.

Wawona Stock Camp (RES-7-011) – Two stock use campground sites relocated from sensitive resource area to Wawona Stables. Heavy equipment including excavator, skid steer, loader, and dump truck would be used. Work would occur during low flow in the summer or fall and take approximately one month.

BEST MANAGEMENT PRACTICES: TOOLS AND TECHNIQUES

Mitigations

All ecological restoration work would follow the Mitigation Measures outlined in Appendix C.

Restoration work in Wilderness

For restoration needs in designated Wilderness, a minimum requirement analysis would be completed and the appropriate techniques selected.

Figure 11: Frequently flooded area at housekeeping camp.

Fencing

Fencing has proven to be effective at rerouting pedestrian traffic to appropriate river access points and allowing colonization of denuded areas with riparian plant species which then stabilizes the river bank from further erosion (Figure 11). Yosemite has used different fencing

styles—most often split rail zigzag and post and rail (Figure 12). Log and block fencing has also been introduced as a more sustainable option in areas where plowing and vehicles frequently cause damage to fencing (Figure 13). Fencing has also demonstrated its effectiveness in supporting restoration efforts in meadow environments. Fencing has been used to delineate appropriate trails and to close off sensitive sections of meadows in order to deter trampling of vegetation and the formation of informal trails.

Figure 12: Before and after protective fencing placement and revegetation at Housekeeping camp.

Figure13: Post and rail fencing (Left) and log and block fencing (right).

Asphalt Removal

Asphalt surface is broken using heavy equipment. Asphalt is then loaded into dump trucks using a loader and moved off site. Small asphalt pieces may be manually collected and removed.

Fill Removal & Recontouring

The topography at some meadow, wetland, and floodplain sites has been made uniform through the import of fill material or by grading or flattening contours of the landform. To re-establish contours or increase topographic heterogeneity, an excavator or dozer may be used to excavate depressions, cut-off channels, and oxbows. On steep riverbanks, an excavator or dozer may push soils and material down the

slope of the bank to create a gentler slope which increases revegetation success. Whenever possible, native fill is used from the restoration site. In meadows with drainage ditches and associated berms, the ditches would be contoured and leveled using fill material already present in associated berms.

Soil Decompaction

Roads, parking, campsites and trails (formal or informal) may have highly compacted soils that are hydrophobic and prevent water from percolating into the soil and alter surface flow patterns. In the field, park staff determines areas of heavy soil compaction and either break up the soils manually using shovels or rakes or with heavy equipment that can support ripping tines such as excavators, skid steer and dozers. Small pockets of fill may be blended into the soil as decompaction occurs with an excavator or dozer with winged rippers. Biologists regularly monitor informal trailing extent and distribution in meadows and apply condition ratings to all informal trails. These ratings reflect the degree to which specific trails have ecological impacts including: bare ground, vegetation condition, and soil compaction. This information would assist restoration workers in identifying areas requiring soil decompaction to promote plant recovery.

Riprap Removal

Several park restoration projects have involved the removal of riprap and restoration of healthy riparian vegetation (Figure 13). Riprap is removed using a track-mounted excavator. The operator picks up the boulders with the bucket of the excavator and either stockpiles the rocks on the terrace, or loads directly into a dump truck. After riprap is removed the bank may be recontoured to facilitate plant establishment.

Bioengineering Techniques

Bioengineering techniques commonly used for riverbank stabilization and restoration include willow hydrodrilling, brush layering, and wood incorporation (Figure 14). Willow wattles and anchoring logs may be used to accrete sediment. To propagate willow, cuttings are taken from established plants and placed deeply into the soil to promote regeneration and to prevent them from washing away during high water events. Rocky or compacted riverbanks are most effectively and efficiently planted using a hydraulic excavator. In fine sediment, a hydro-drill (a pump with a high-powered stream of water) can create deep holes into which cuttings are placed. Willows may also be bundled into wattles and partially buried and anchored along riverbanks. Large wood may also be use to provide structure when repairing highly eroded riverbanks or after riprap removal. One objective of bioengineering is to decrease flow velocities by increasing roughness so that river sediment is captured over time, slowly rebuilding the banks.

Figure 14: Before (left) and after (right) riverbank restoration through riprap removal and revegetation at the former Lower Rivers Campground. Riparian vegetation thrives on the riverbank.

Revegetation Methods

In the riparian zone, sedges, rushes and willow and cottonwood are desirable species for planting. Restoration staff collect pole cuttings (for vertical planting using the hydrodrill, Figure 15) from willows and cottonwoods along the Merced River using loppers; targeting straight branches 5-6' long and approximately 1" in diameter. Horizontal planting (such as that done with an excavator or backhoe) is another revegetation method, as well as the primary planting method for bioengineering. This method is utilized at sites with greater disturbance where riverbank integrity and existing root mass does not exist. Overall, willows have a high survival rate although some species do not establish as readily as others.

Figure 15: Yosemite restoration staff have employed bioengineering techniques in past park projects including Brush layering with willows (left). Restoration workers insert live willow cuttings with the aid of a hydrodrill to revegetate this riverbank (right).

On riverbank terraces, species matching the surrounding native flora would be planted. Watering or irrigation is part of post-planting maintenance for 3 years as it increases plant survival, especially on higher and drier sites such as terraces. Vegetation along the riverbanks plays an important role in flow attenuation and sediment capture during flood events. Native riparian vegetation is also naturally recruited on exposed sediment. Nursery-grown plants would be propagated from local genetic stock. Plants would be salvaged prior to ground disturbance and replanted.

In meadow environments, park biologists use a variety of techniques for ecological restoration. Imported fill material is removed from meadows using heavy equipment such as an excavator, loader, and dump truck. When removing informal trails, restoration workers would decompact soils, recontour the area to remove the linear feature and spread locally gathered native speed to promote plant establishment. Sometimes, vegetation plugs are salvaged using an excavator and skid steer and replanted in the disturbed areas. Mulching to promote revegetation and reduce erosion would be used as necessary. Bare areas would be revegetated with native plants grown from locally collected seed. Erosion control blankets and wattles are sometimes needed to control erosion until vegetation becomes established.

Large Wood Incorporation

To restore riverbanks that have receded due to unnatural bank erosion, large wood may be incorporated into riverbanks. Large logs are placed strategically to limit scour and promote accretion and may or may not be anchored. For example, logs may be placed into a trench dug in the terrace to anchor it. Cabling could also be used to anchor wood to the shore.

These techniques are similar to what has been used in Yosemite Valley riverbank restoration projects in the past. For example, incorporation of large wood was successfully used in the 1995 Housekeeping Camp Restoration, along with riprap removal, brush layering and fencing.

Opportunistic Large Woody Debris Addition through Hazard Tree Mitigation

Potentially hazardous trees are sometimes felled along the river for safety reasons. To assist in the riverine habitat recovery, these hazard trees can be purposefully felled into the river. Trees are felled using both excavators and forestry loaders with winch. This retention of the root wad provides needed weight to help anchor the tree to the shore. Felled trees add biomass, slow water flow, create structural and microclimatic diversity, and provide shade for riparian organisms.

Constructed Log Jams

Constructed log jams (CLJs) increase channel complexity, capture sediment, mitigate channel widening and provide aquatic habitat. CLJs are constructed of 10-20 logs, often with their root wads intact, 12” or greater in diameter. The composite structure can be 30-150’ long and 10-30’ wide with a height of 8 feet. Thus, an CLJ may occupy an area of 33 500 square yards with volumes ranging from 90 – 1,300 cubic yards. The particular size of a given CLJ depends on the objective (deflecting flow away from a vulnerable riverbank to facilitating bar formation) and its location in the river. CLJs are

constructed in the river channel and anchored by burying ends of logs in sediment. CLJs would be designed to look natural, without straight-cut edges and with root wads remaining. Planting of riparian vegetation on the CLJ further enhances the natural aesthetic (Figure 16).

Figure 16: Natural wood loading in the Merced River (left) and an engineered log jam (right, photo courtesy of A.P. Brooks).

Boardwalks

Boardwalks have proven to be a low-impact way of providing access to wet, sensitive and highly visited areas that are susceptible to trampling (Figure 17). Boardwalks are often used in restoration as alternative to complete closures of sensitive habitats. Boardwalks are an effective way to promote sheet flow, protect native vegetation, and reduce the potential vectors for the spread of non-native species, while allowing visitors to experience the flora and fauna of these unique environments. In Yosemite, boardwalks have been successful in allowing visitation of sensitive meadows and can provide access and throughways in locations where current trails are frequently inundated with water, cause severe damage to plants and soils, and fragment sensitive vegetation and wildlife communities.

Figure 17: Trails through frequently inundated wet meadows, such as in cook's meadow pre-restoration (left), cause periperal vegetation trampling and soil compaction and make access difficult. A boardwalk installed in 2005 allows for visitor access into the meadow environment and protects the meadow soils and hydrology.

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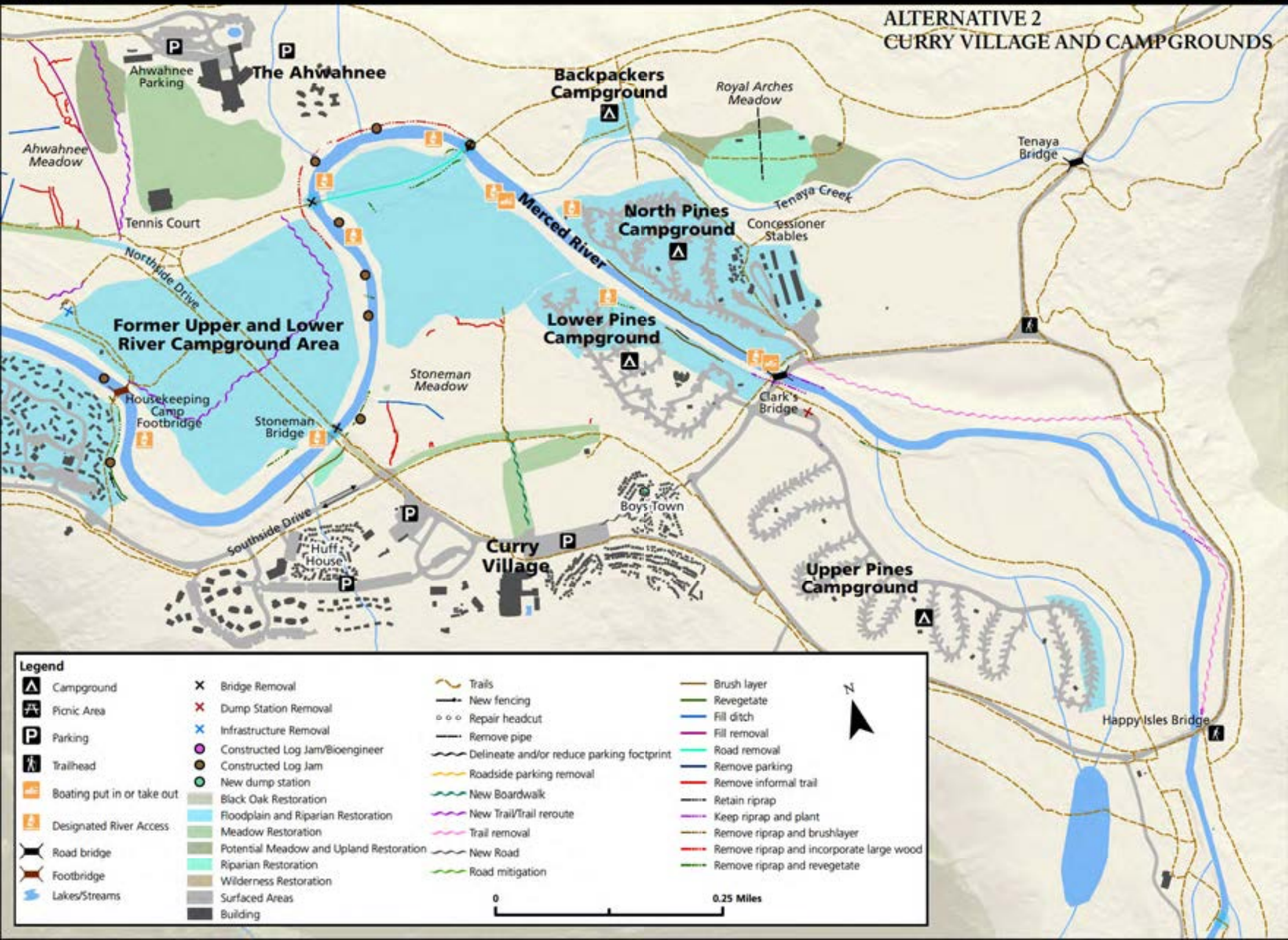

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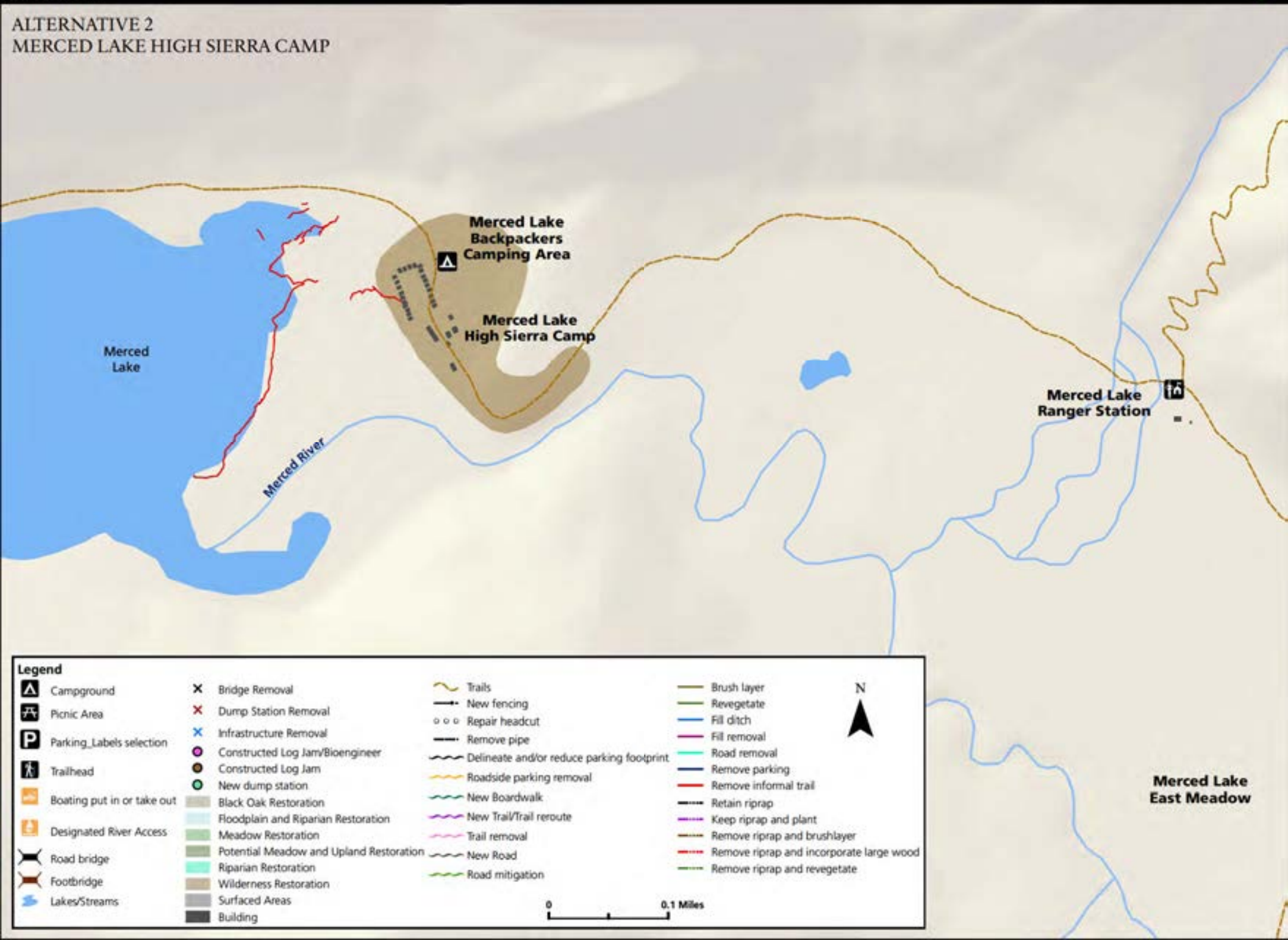

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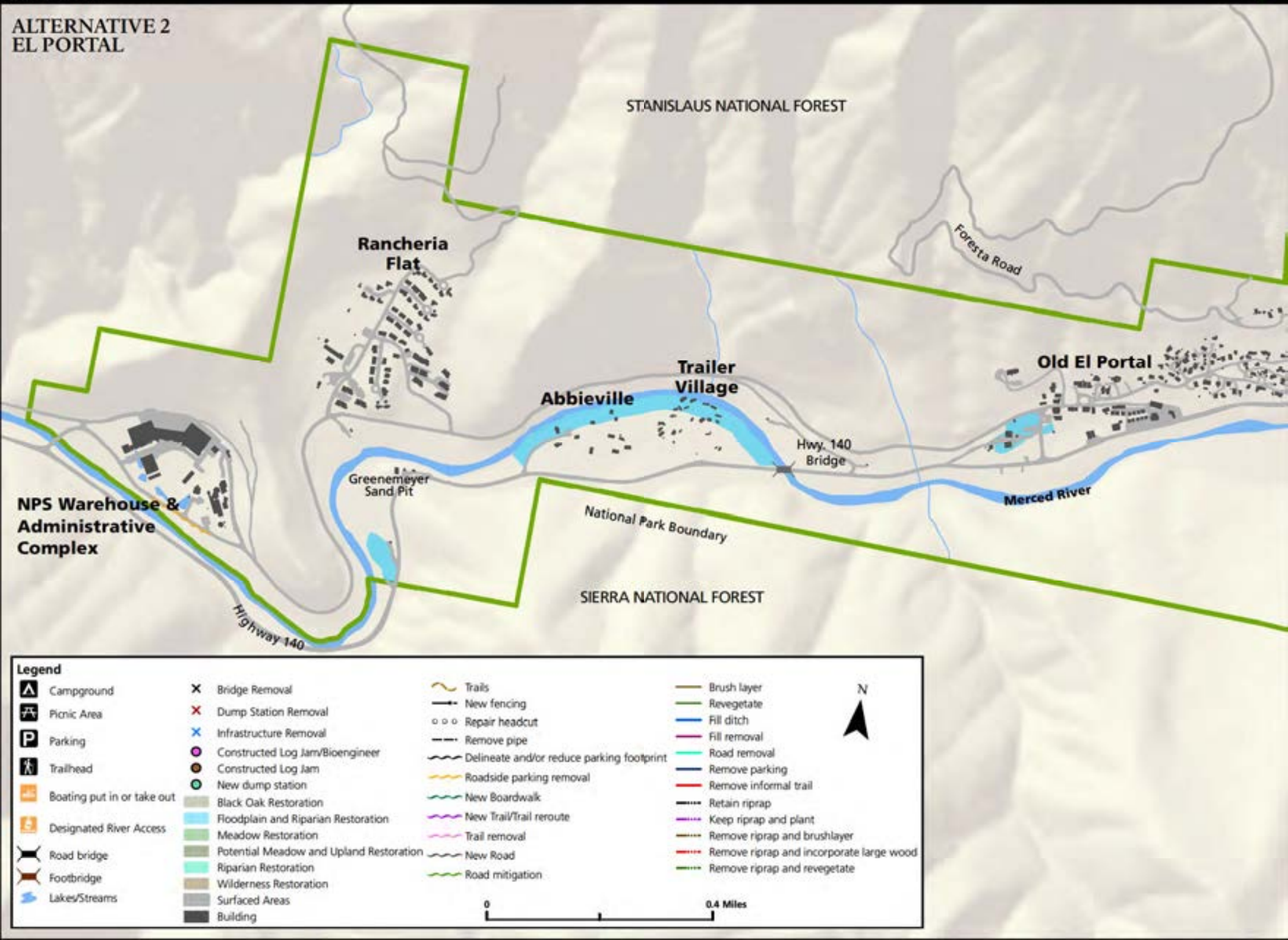

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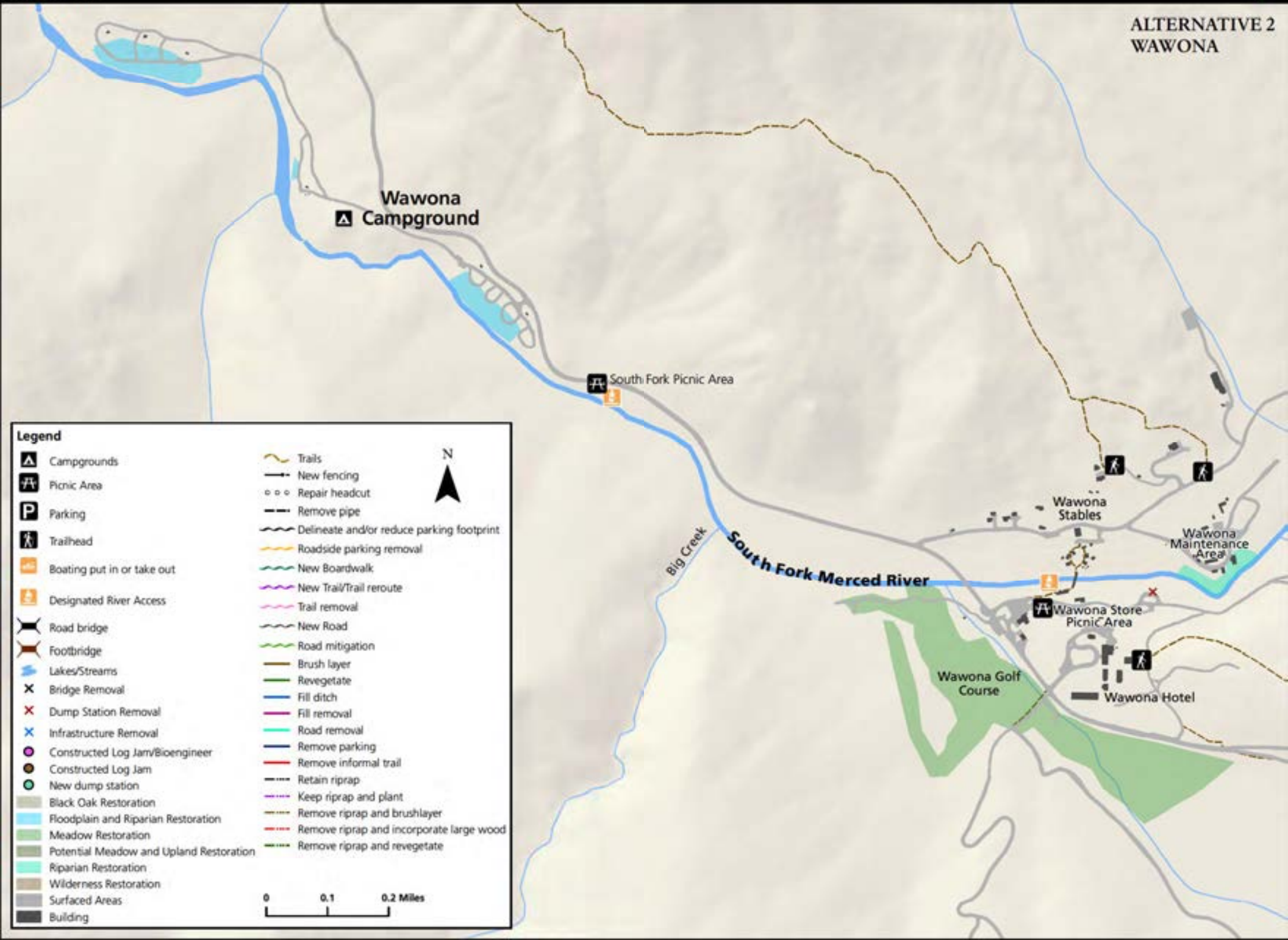

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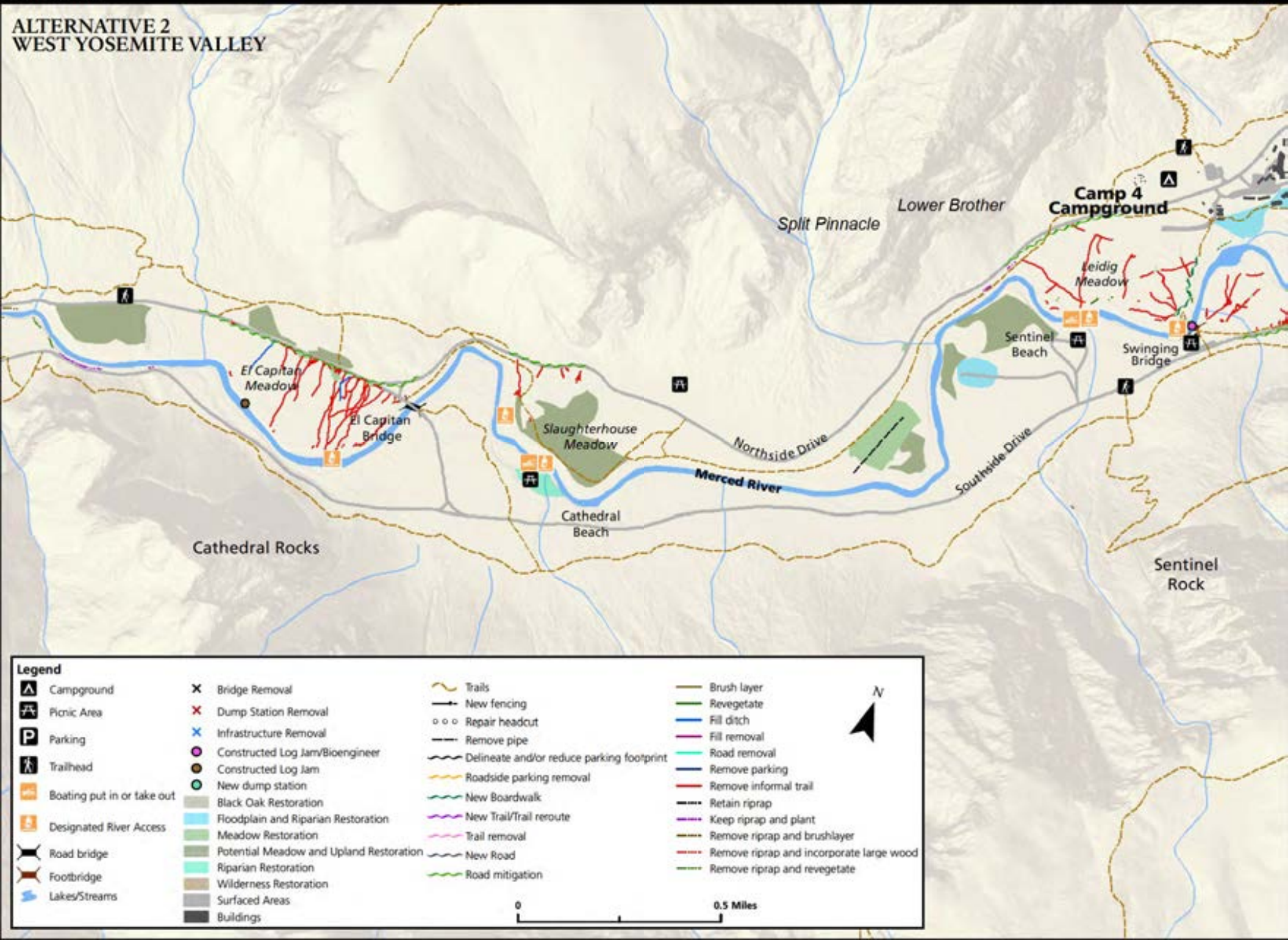

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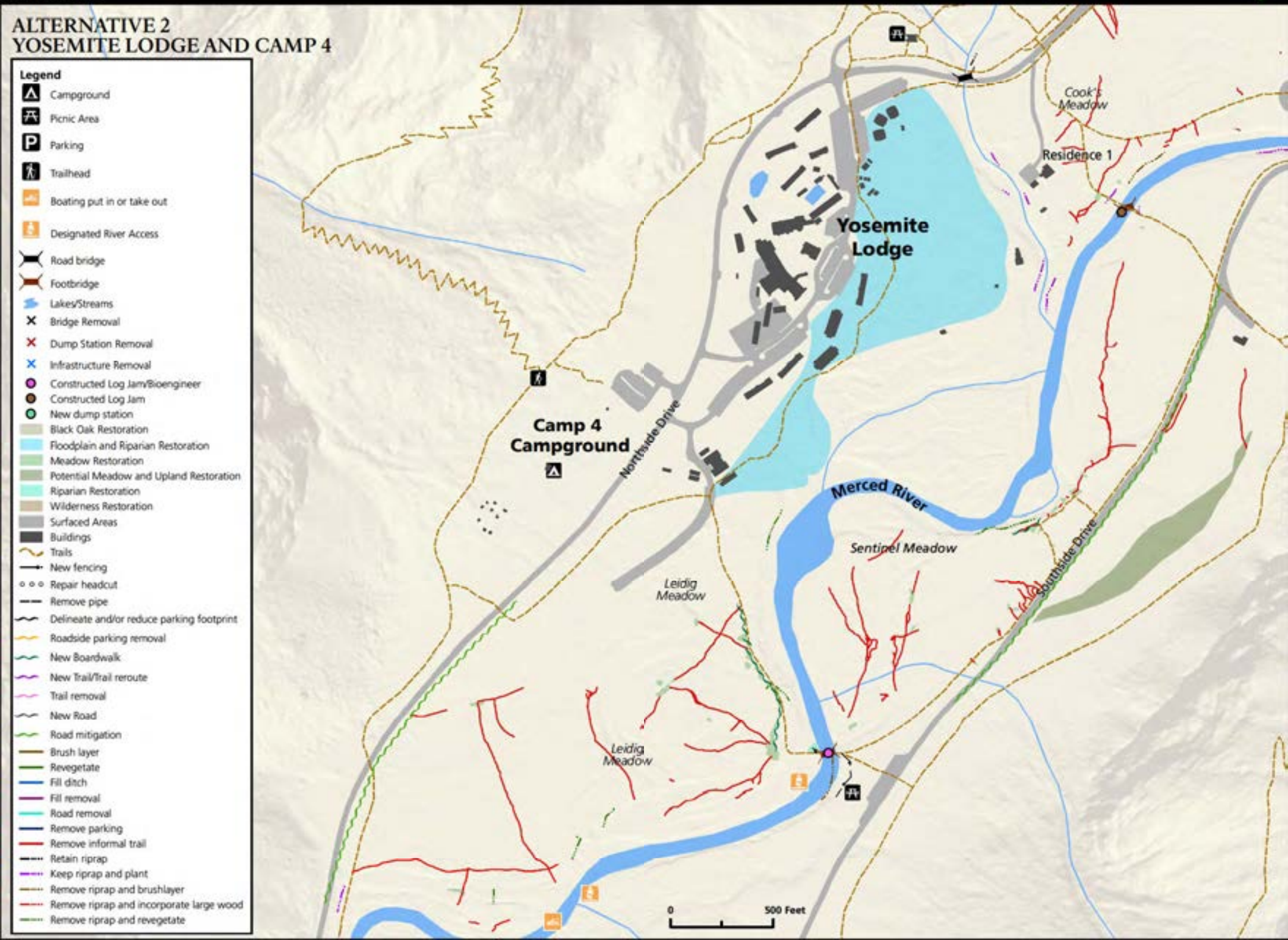
YOSEMITE LODGE AND CAMP 4



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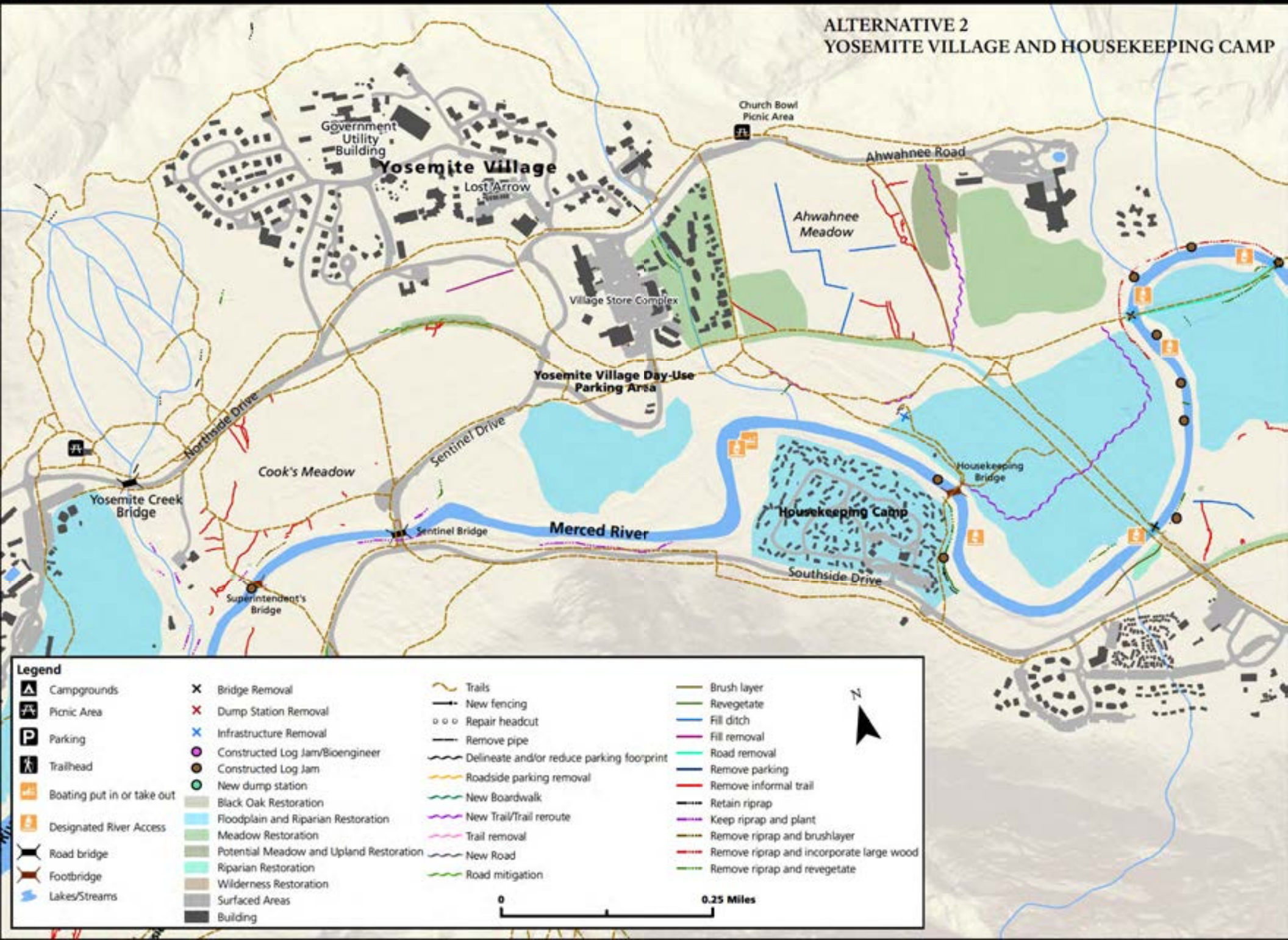

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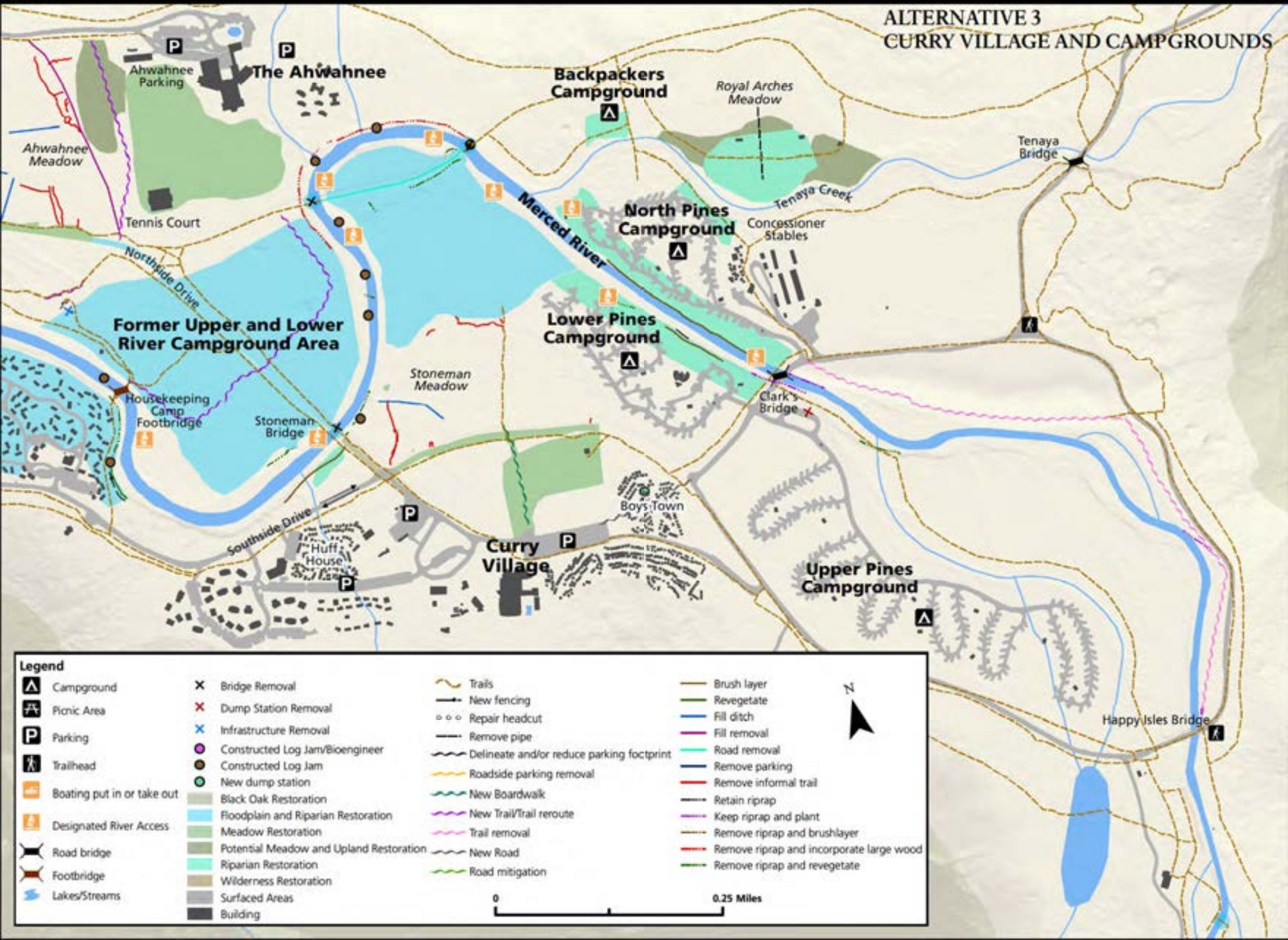
CURRY VILLAGE AND CAMPGROUNDS



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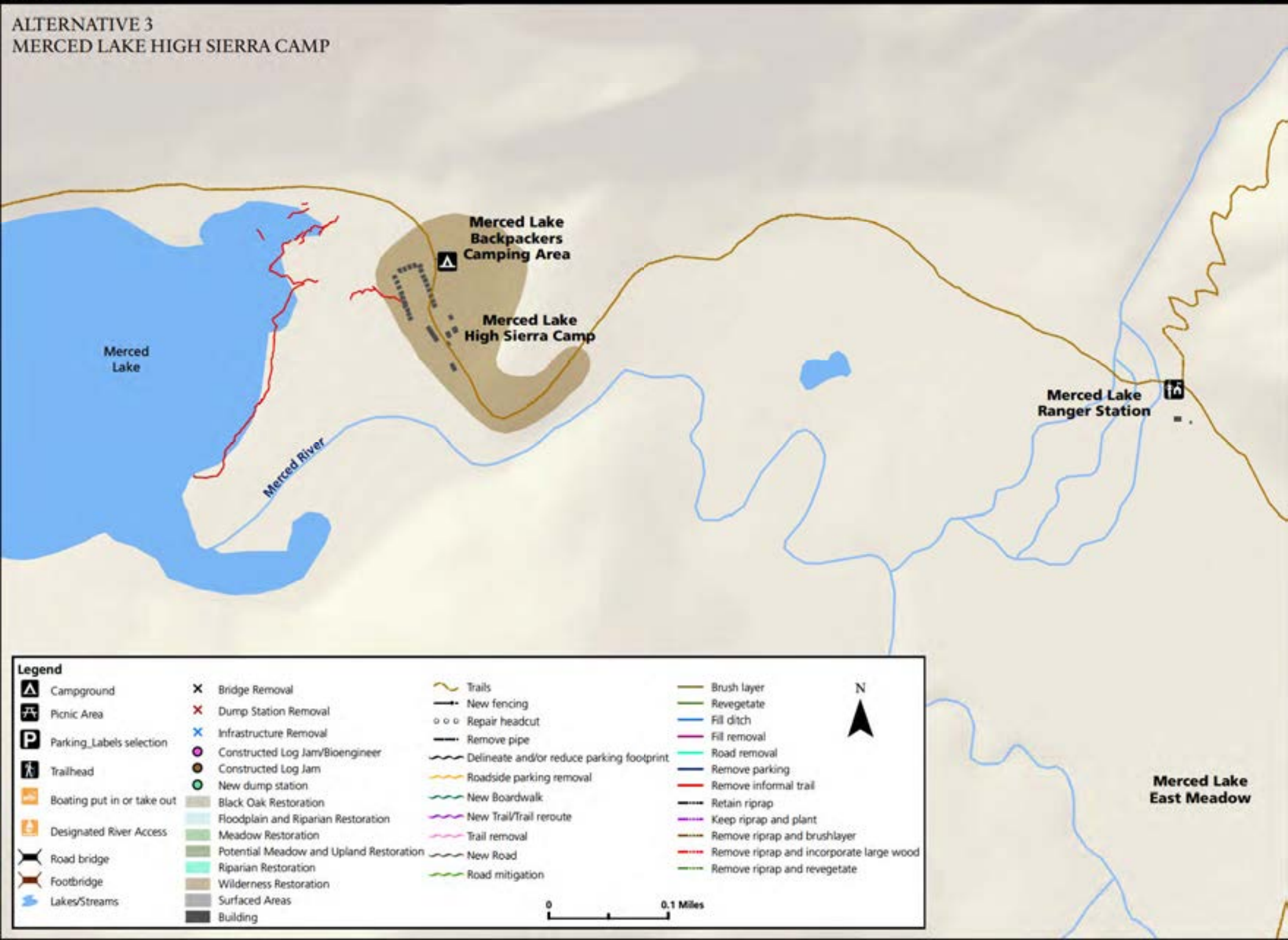

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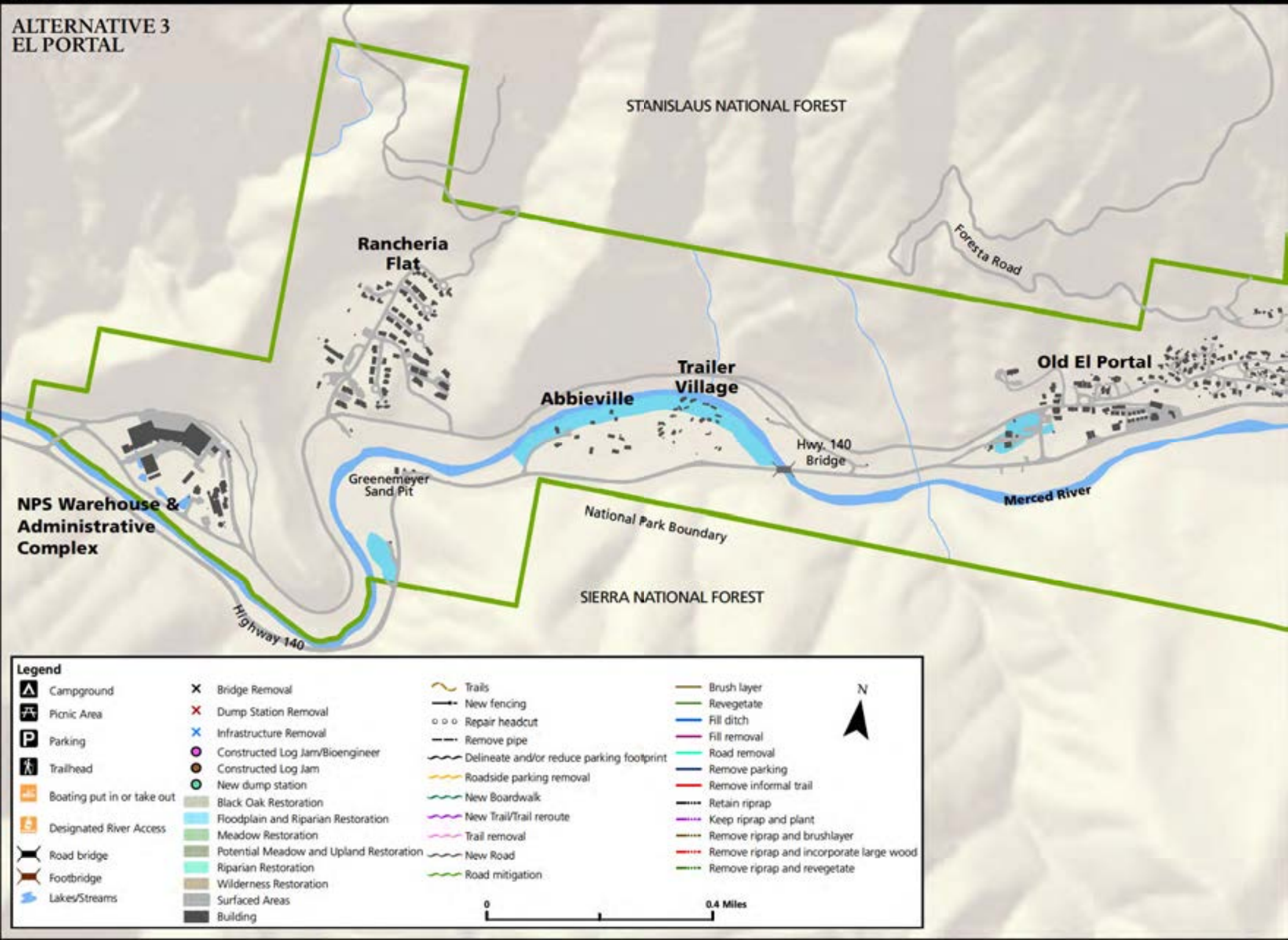

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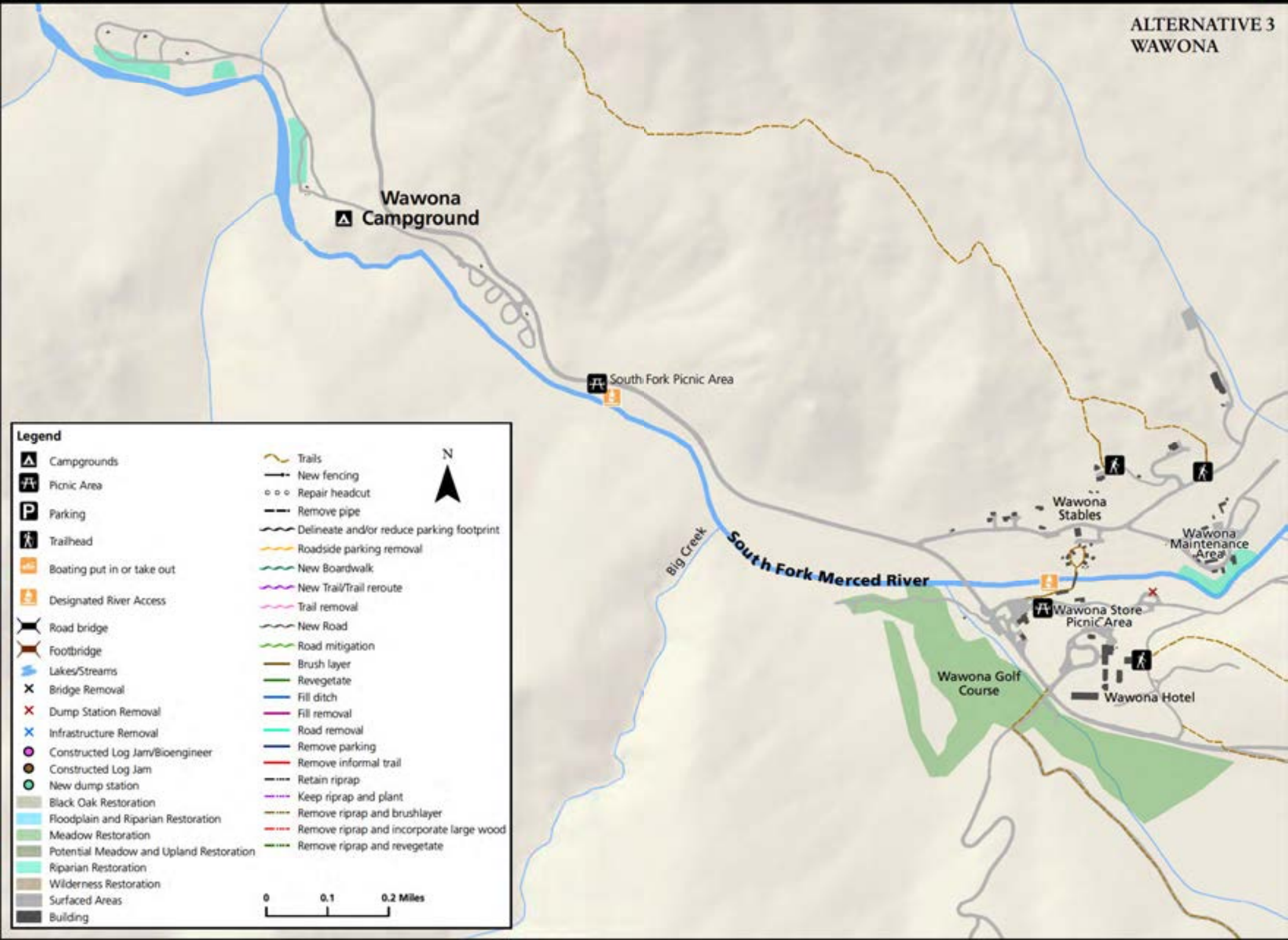

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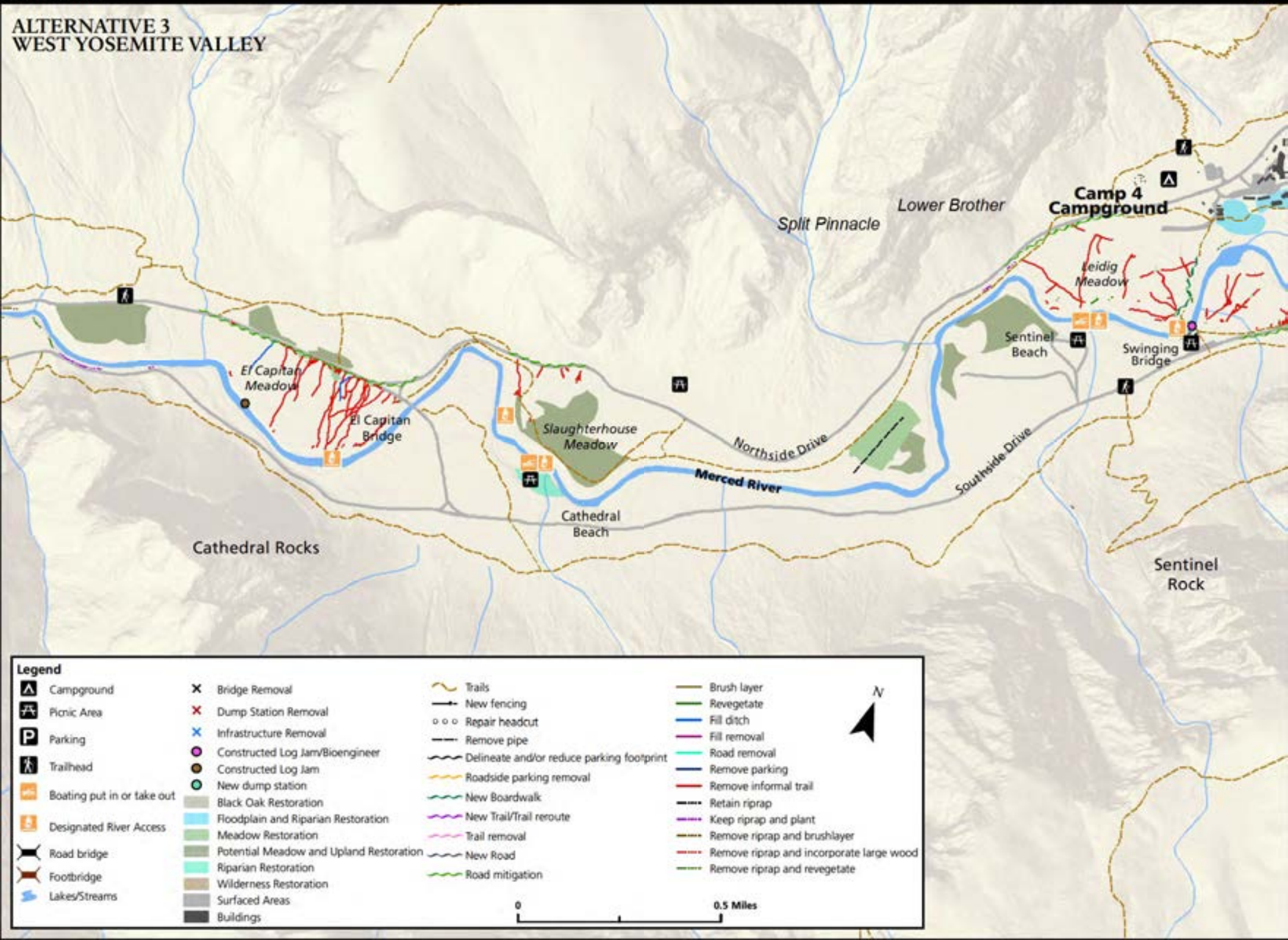

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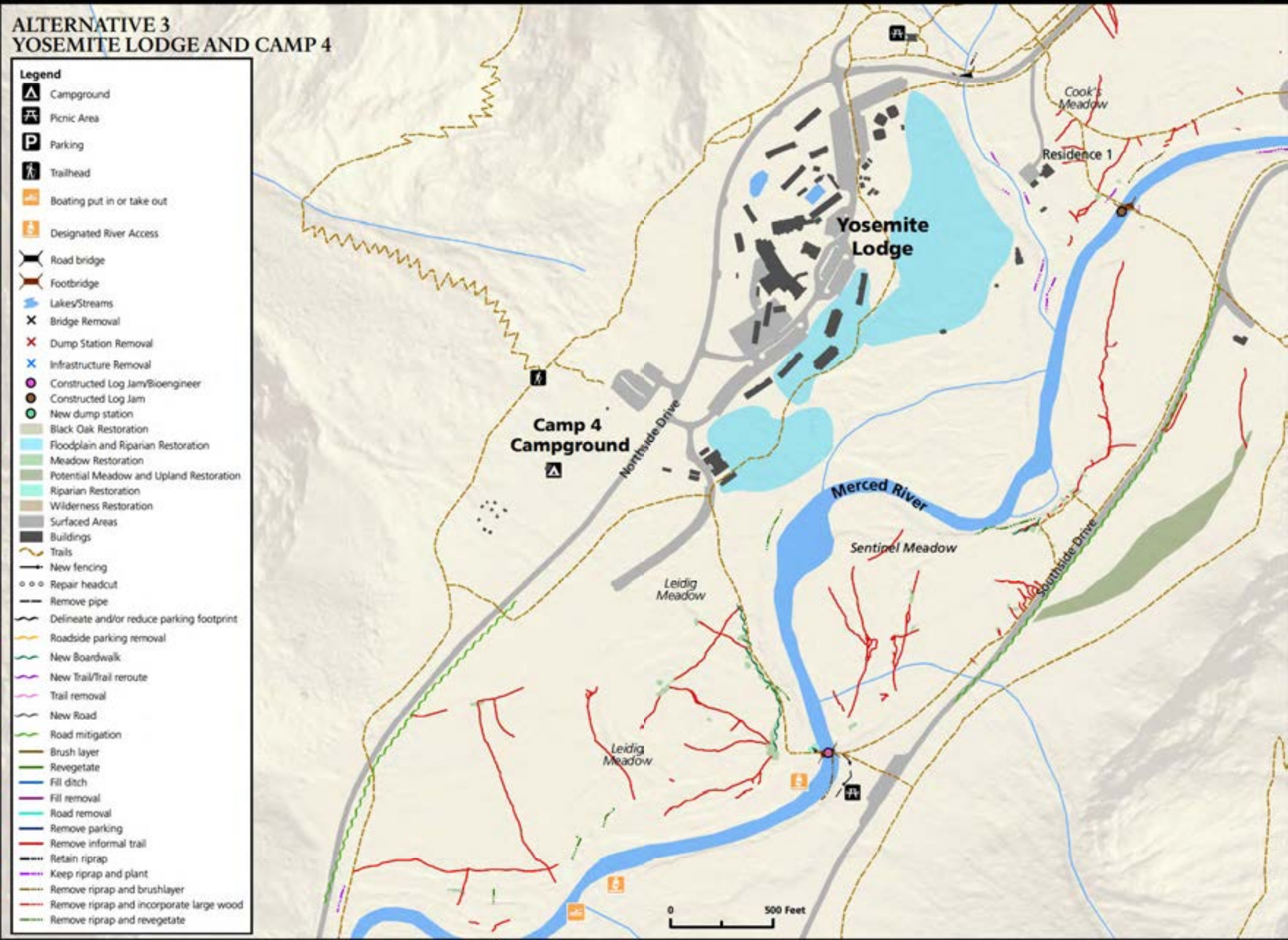

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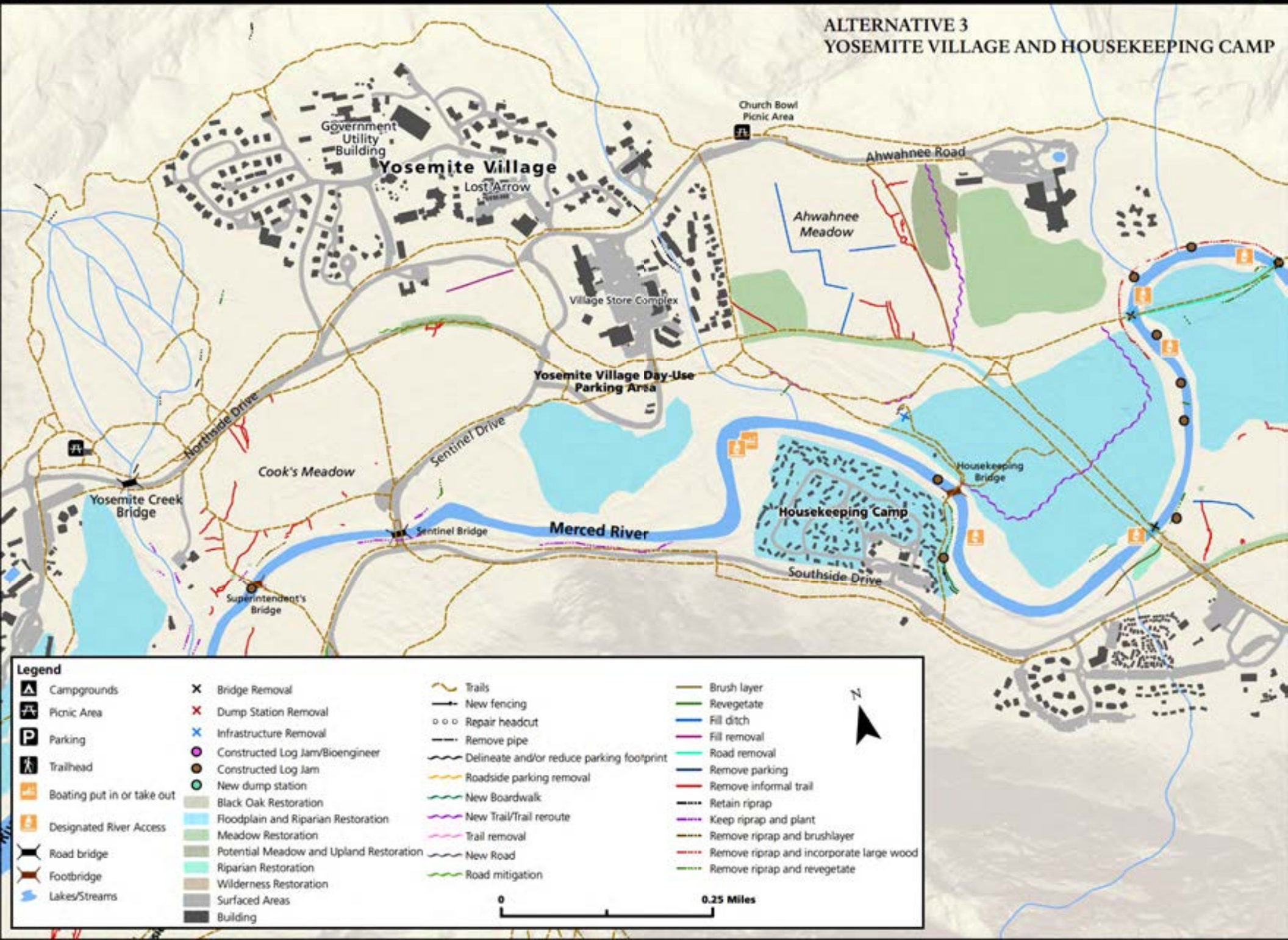

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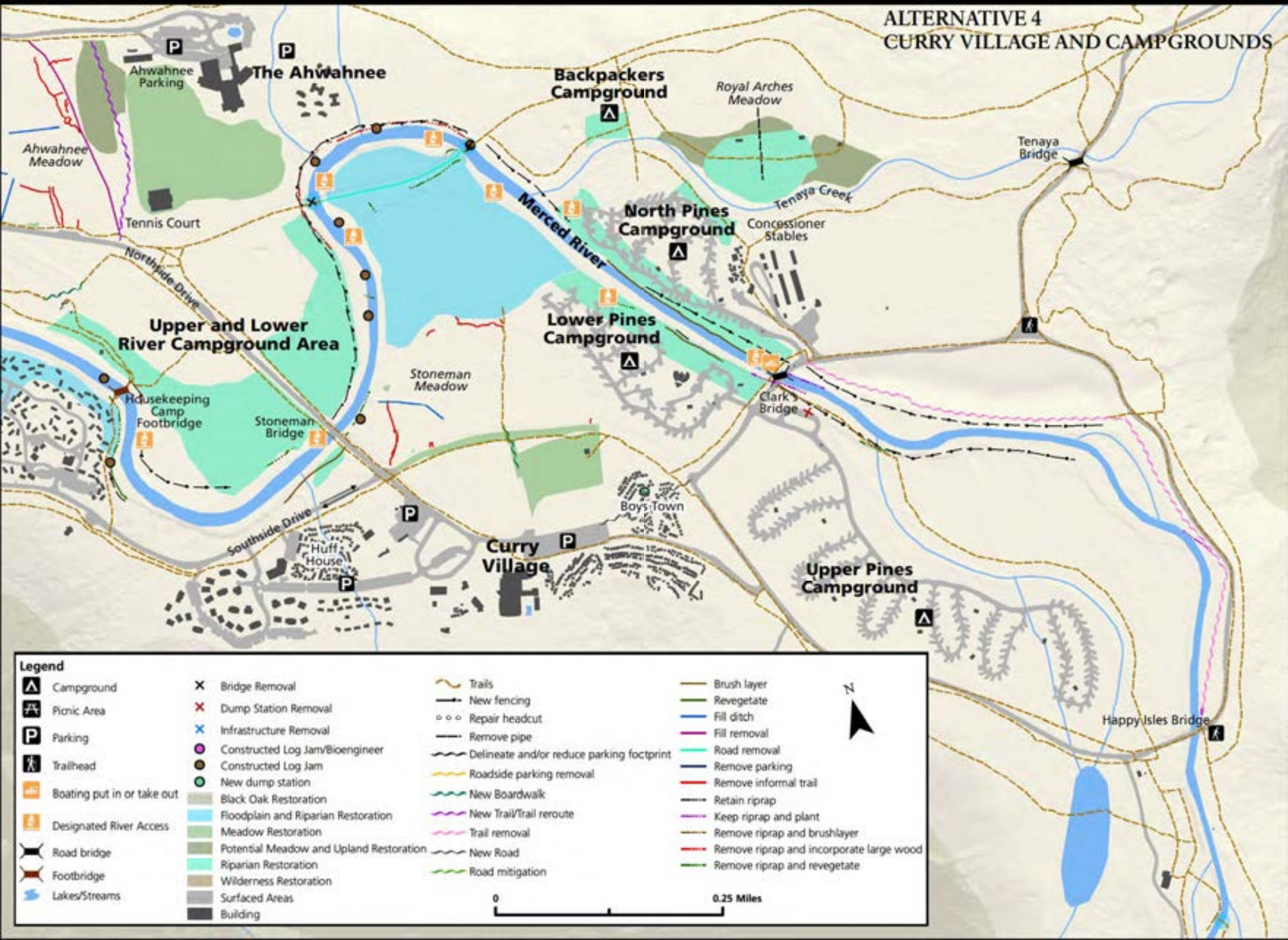

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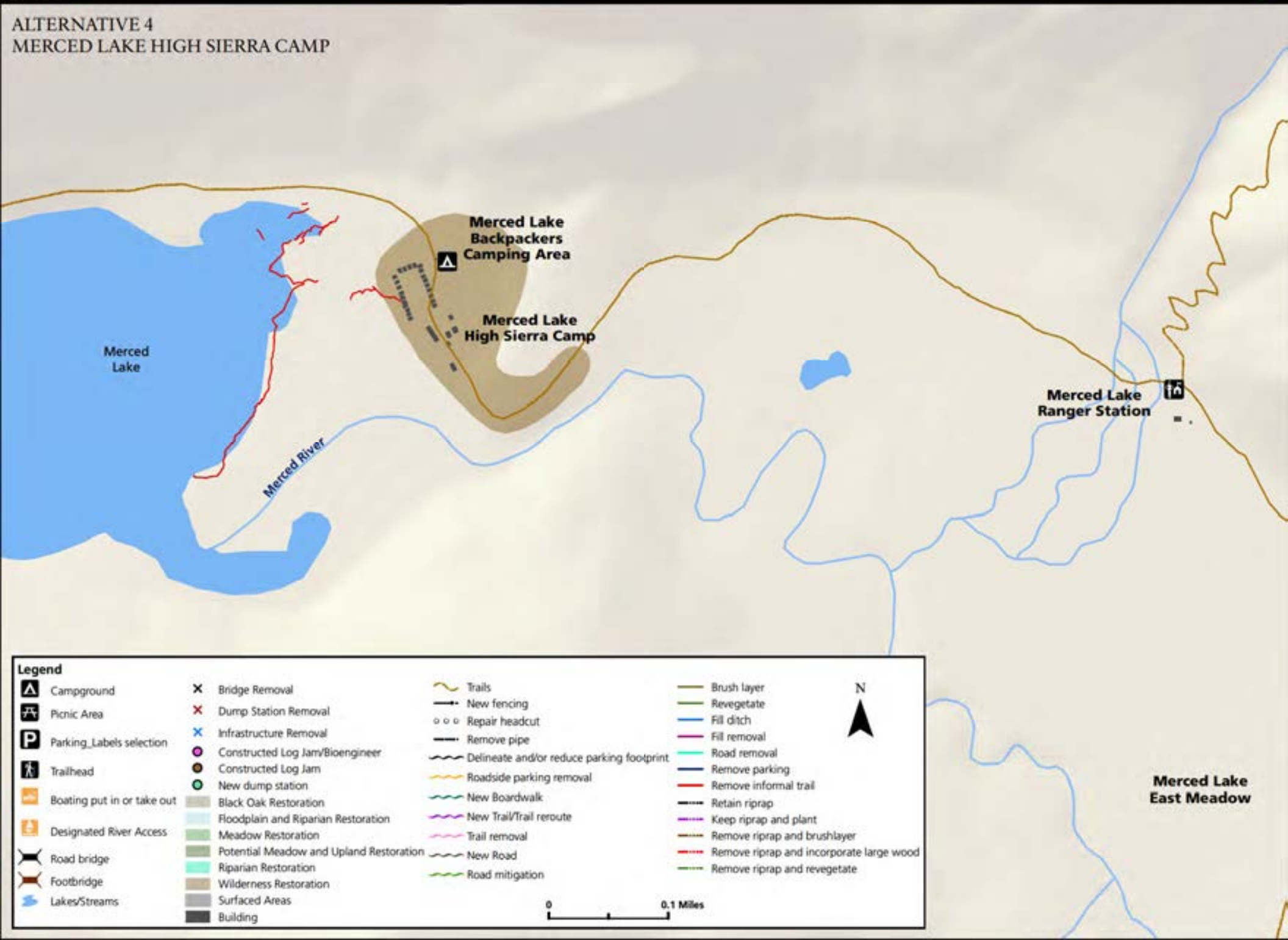

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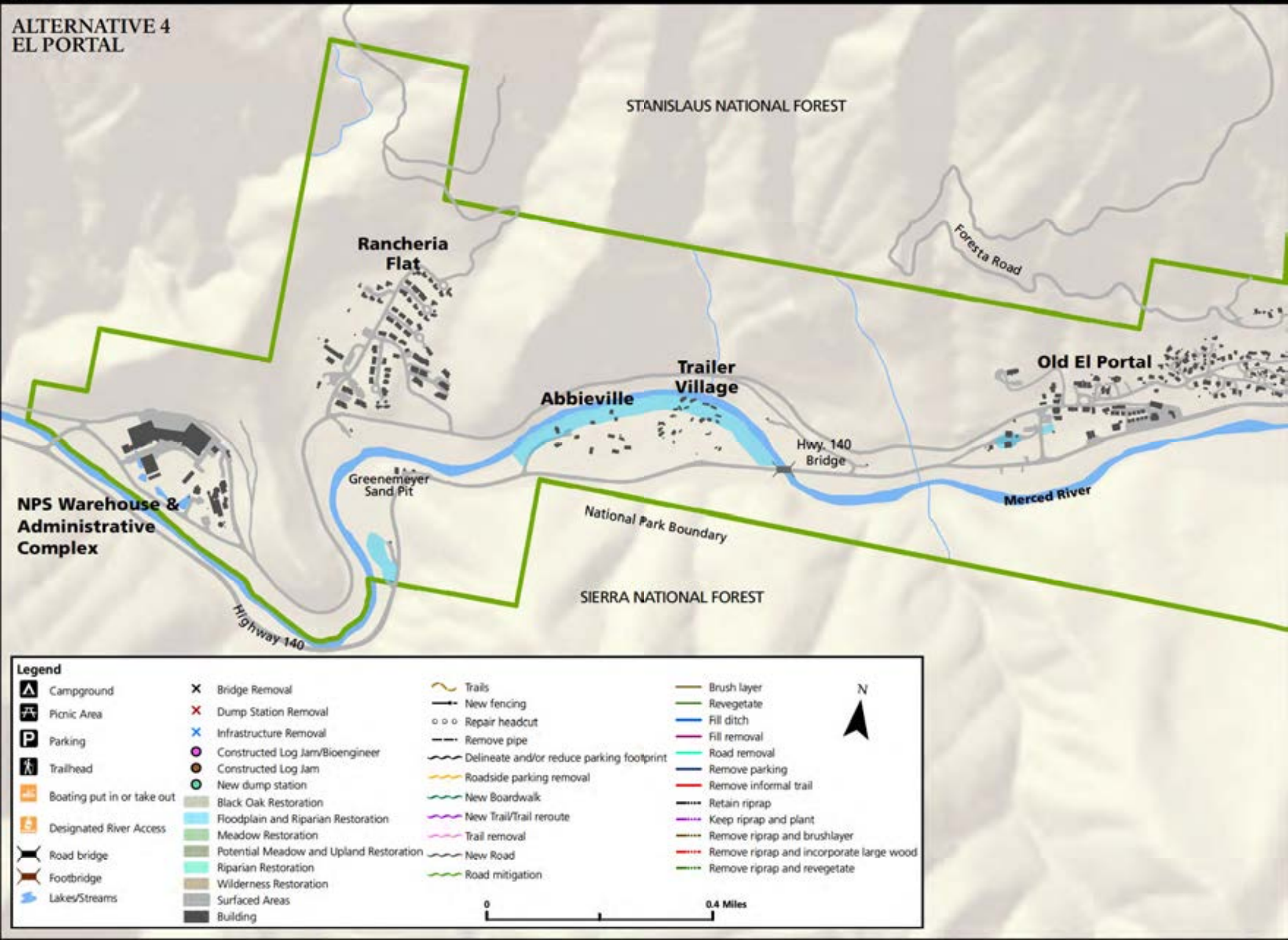

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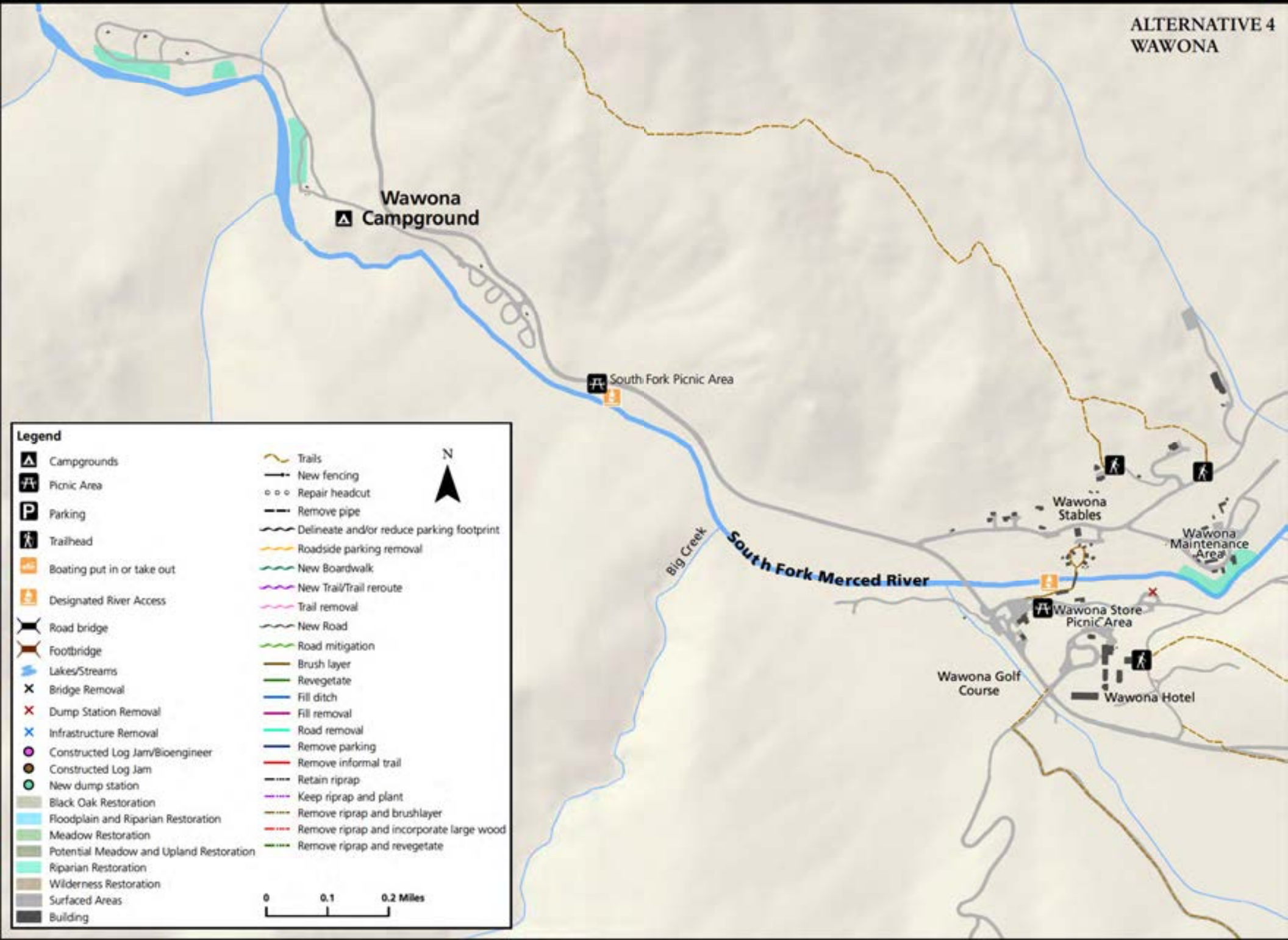

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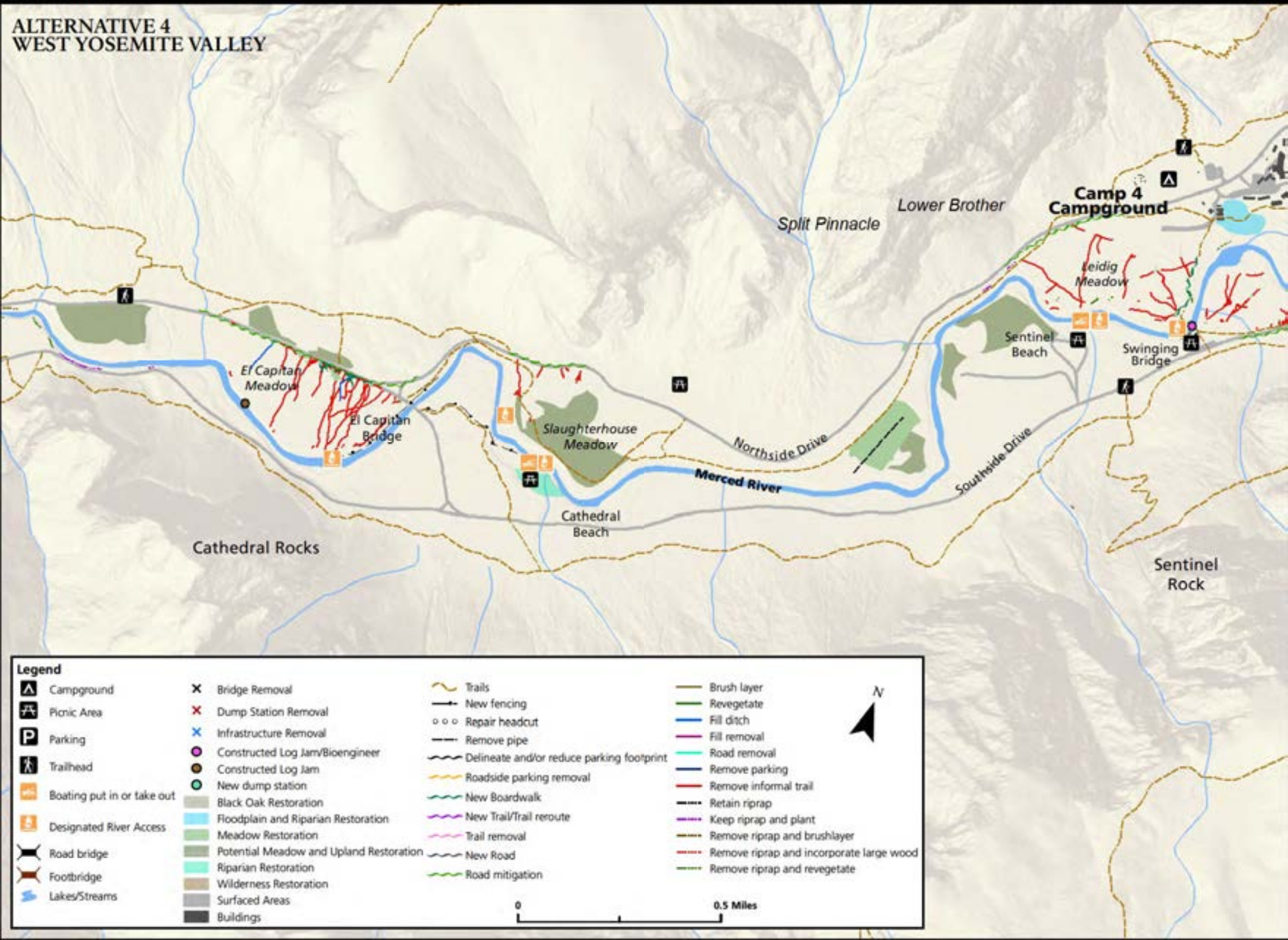

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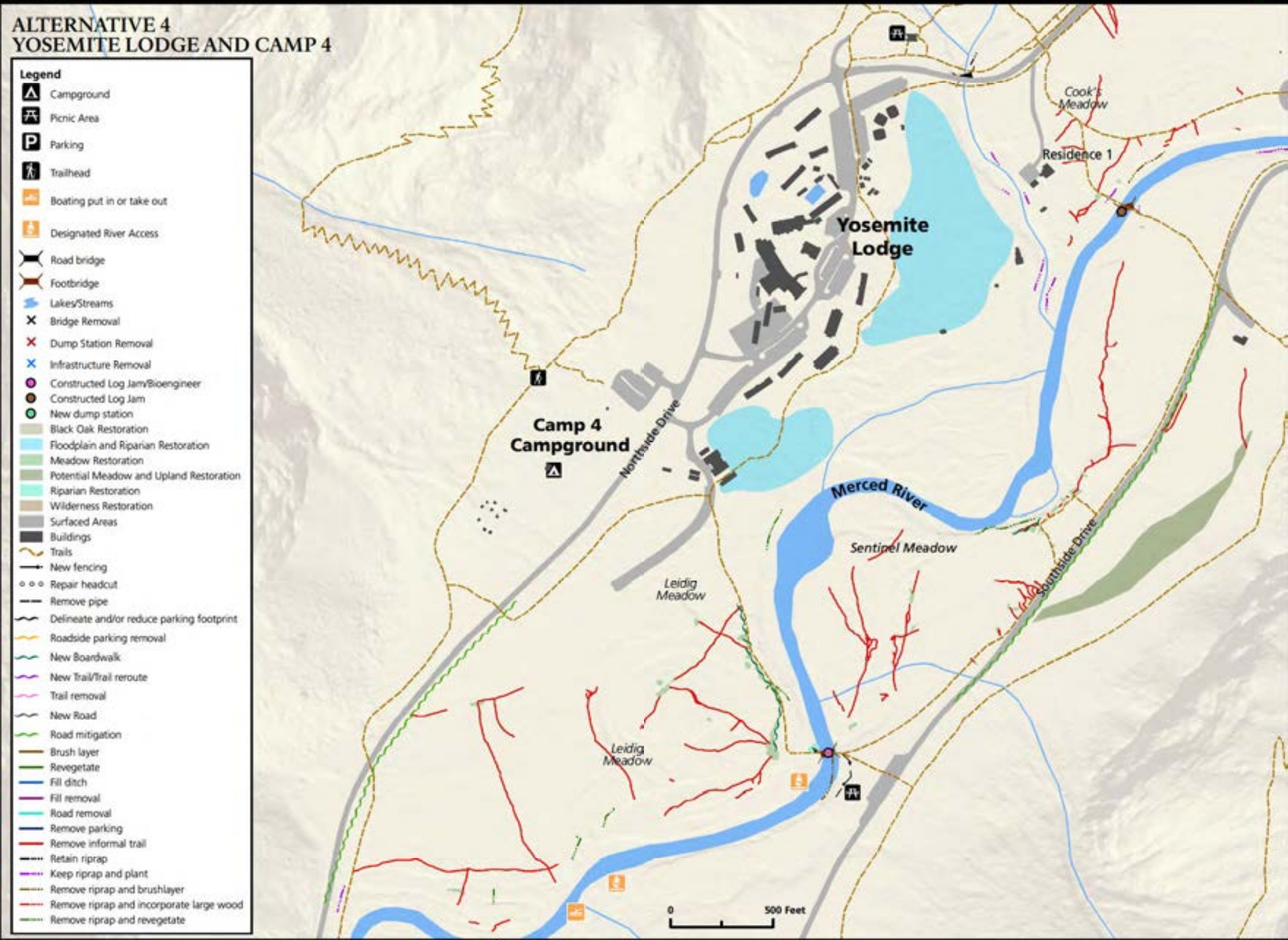
YOSEMITE LODGE AND CAMP 4



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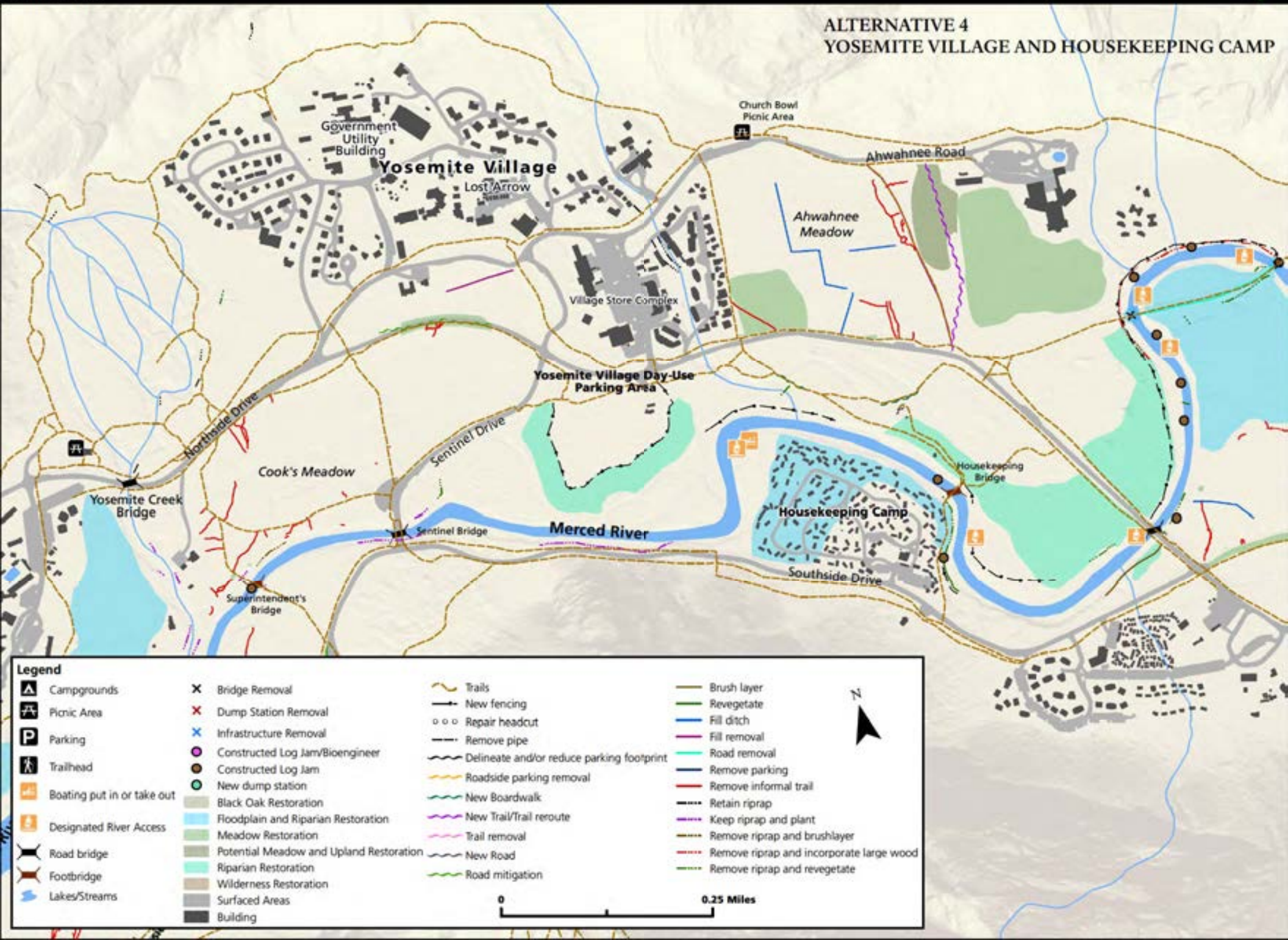

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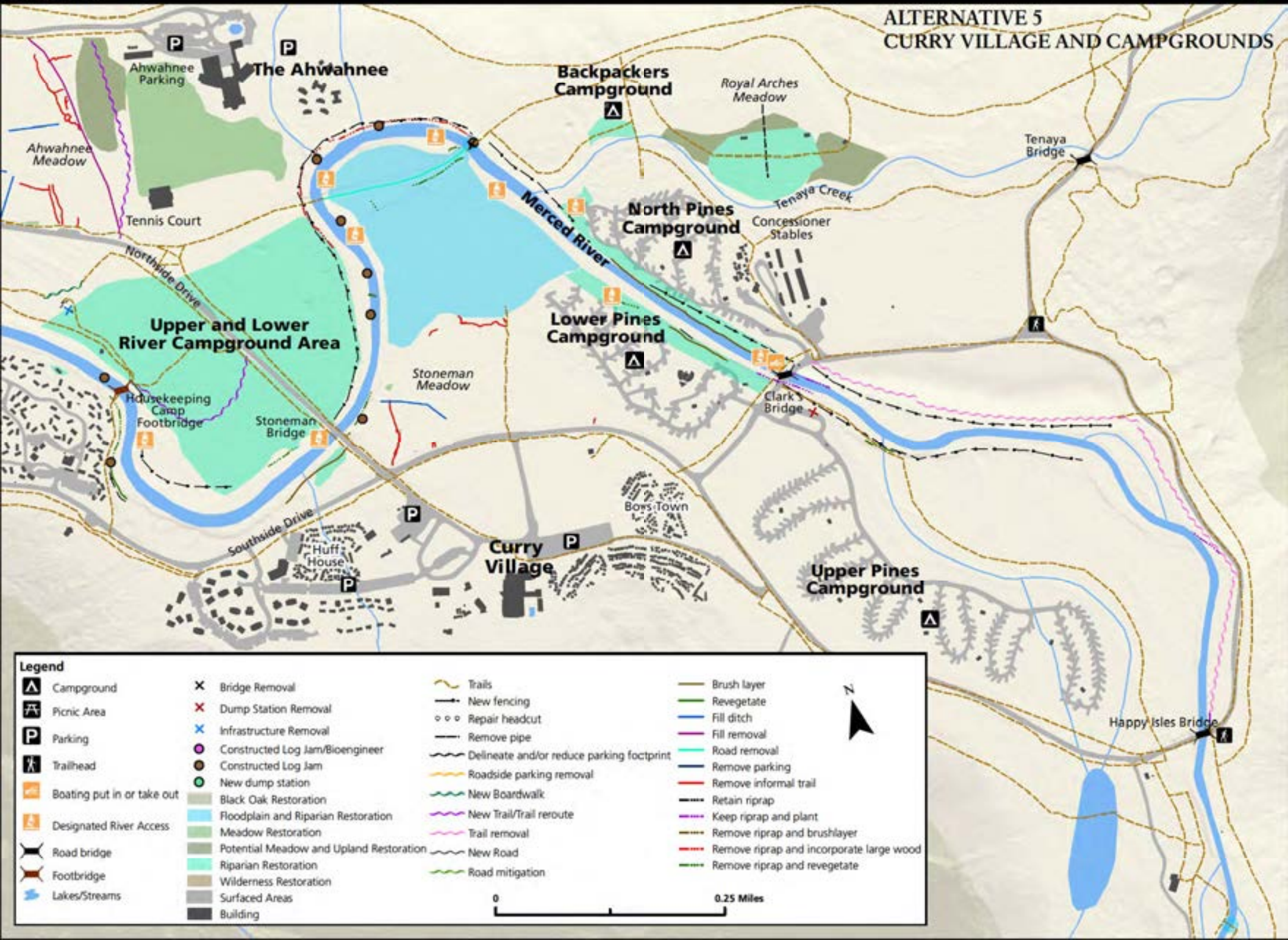

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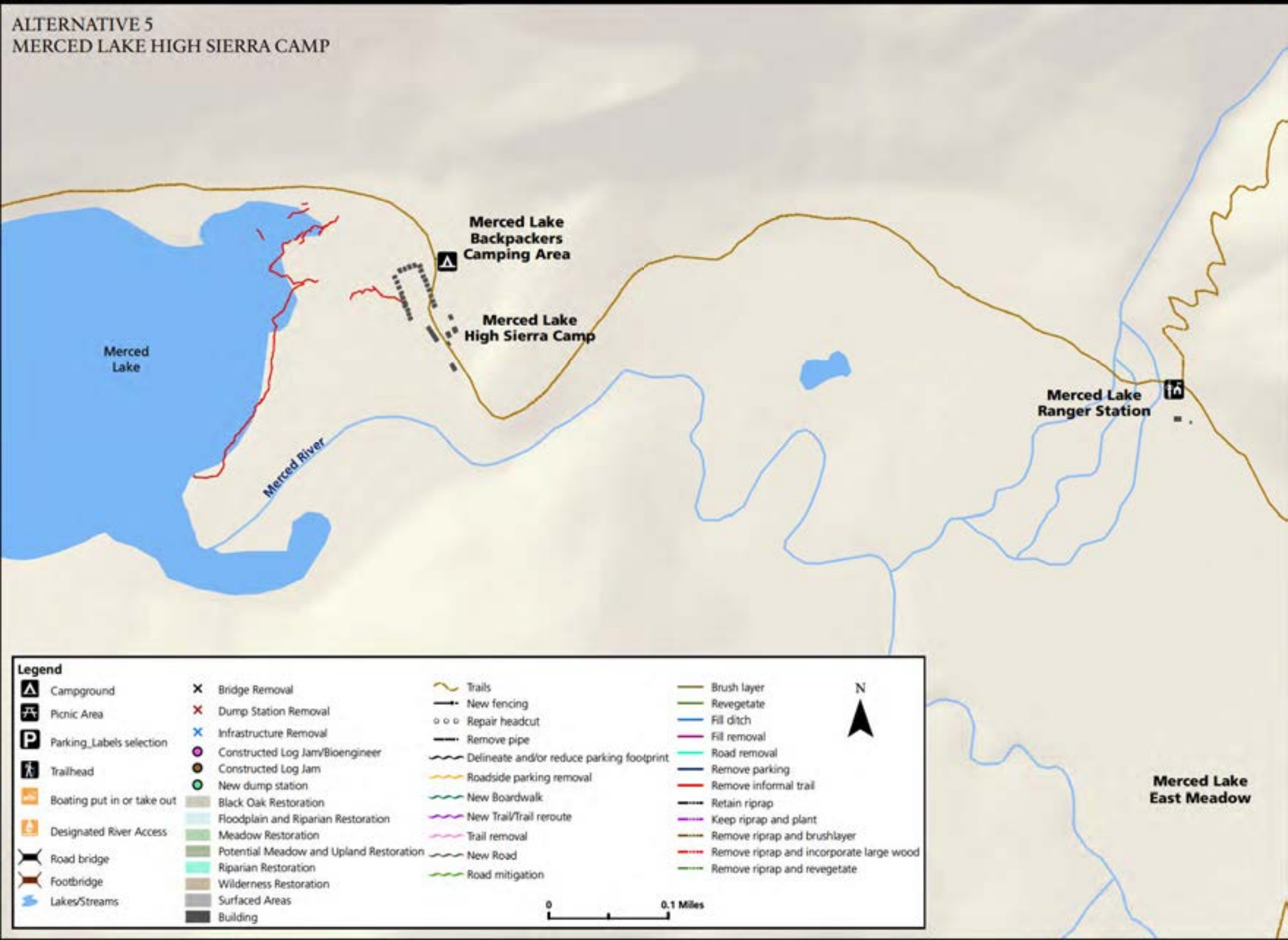
ALTERNATIVE 5
MERCED LAKE HIGH SIERRA CAMP



Yosemite National Park
California

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National Park Service
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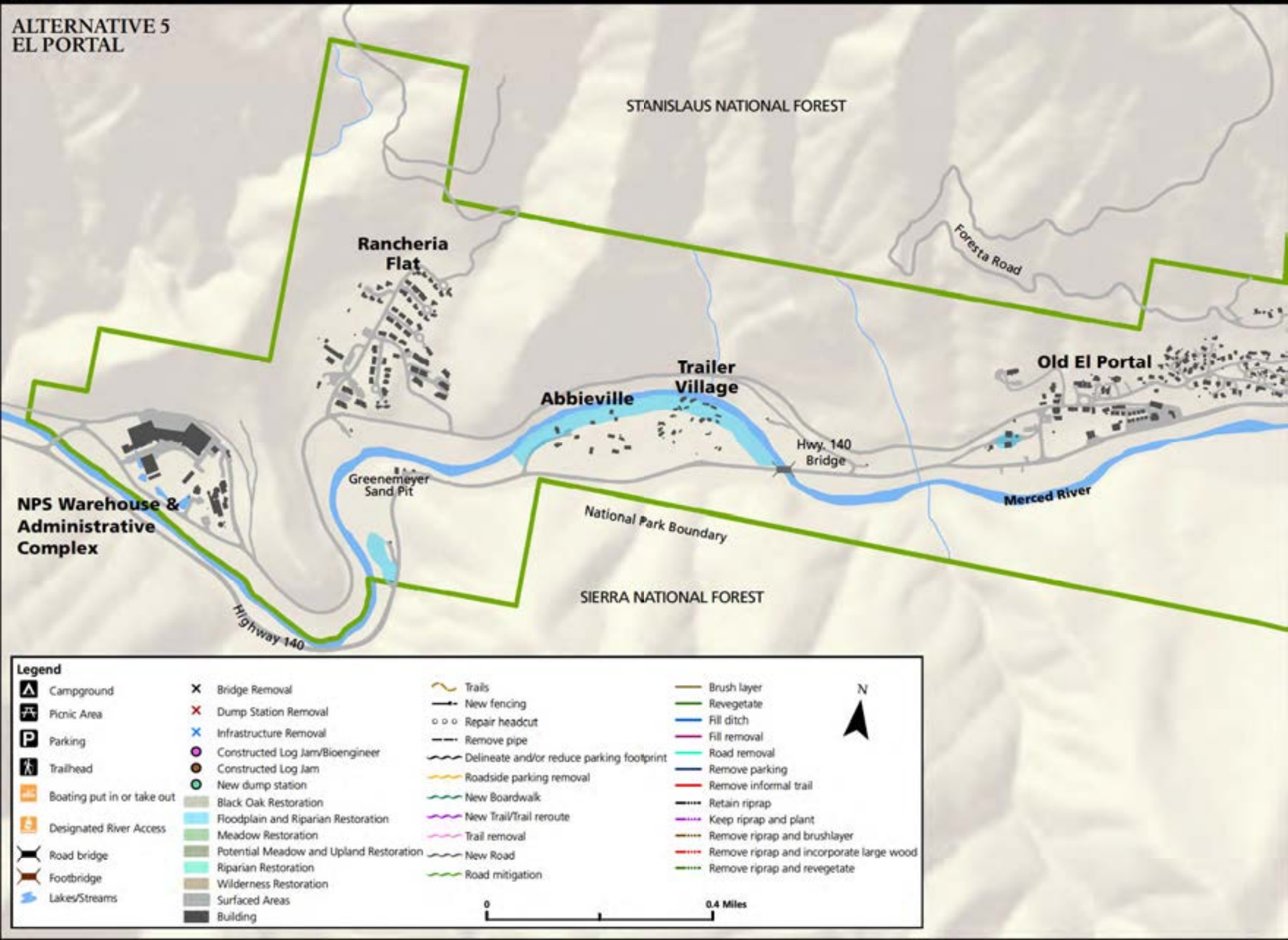

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California

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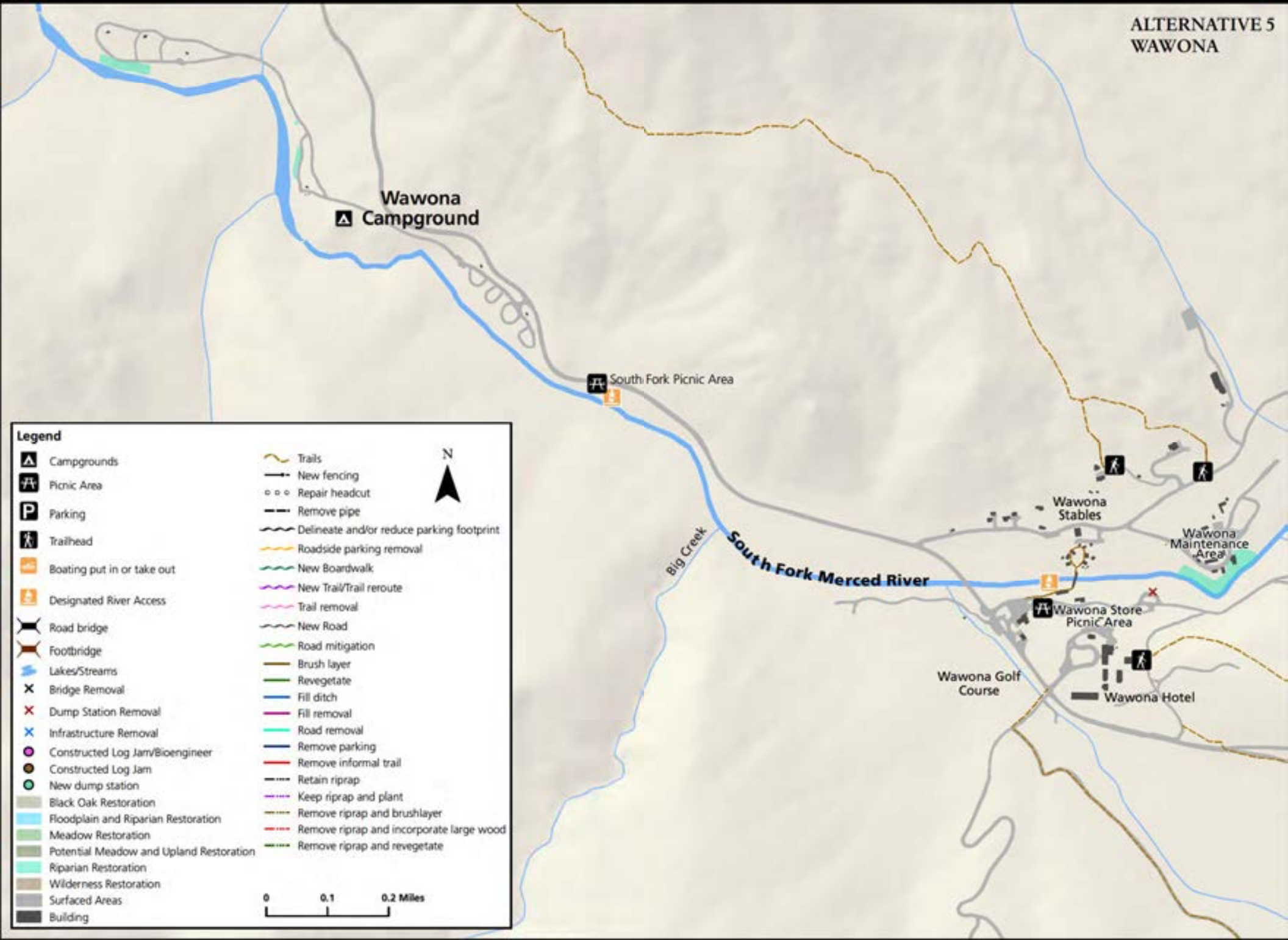

Legend

- Campgrounds
- Picnic Area
- Parking
- Trailhead
- Boating put in or take out
- Designated River Access
- Road bridge
- Footbridge
- Lakes/Streams
- Bridge Removal
- Dump Station Removal
- Infrastructure Removal
- Constructed Log Jam/Bioengineer
- Constructed Log Jam
- New dump station
- Black Oak Restoration
- Floodplain and Riparian Restoration
- Meadow Restoration
- Potential Meadow and Upland Restoration
- Riparian Restoration
- Wilderness Restoration
- Surfaced Areas
- Building
- Trails
- New fencing
- Repair headcut
- Remove pipe
- Delineate and/or reduce parking footprint
- Roadside parking removal
- New Boardwalk
- New Trail/Trail reroute
- Trail removal
- New Road
- Road mitigation
- Brush layer
- Revegetate
- Fill ditch
- Fill removal
- Road removal
- Remove parking
- Remove informal trail
- Retain riprap
- Keep riprap and plant
- Remove riprap and brushlayer
- Remove riprap and incorporate large wood
- Remove riprap and revegetate

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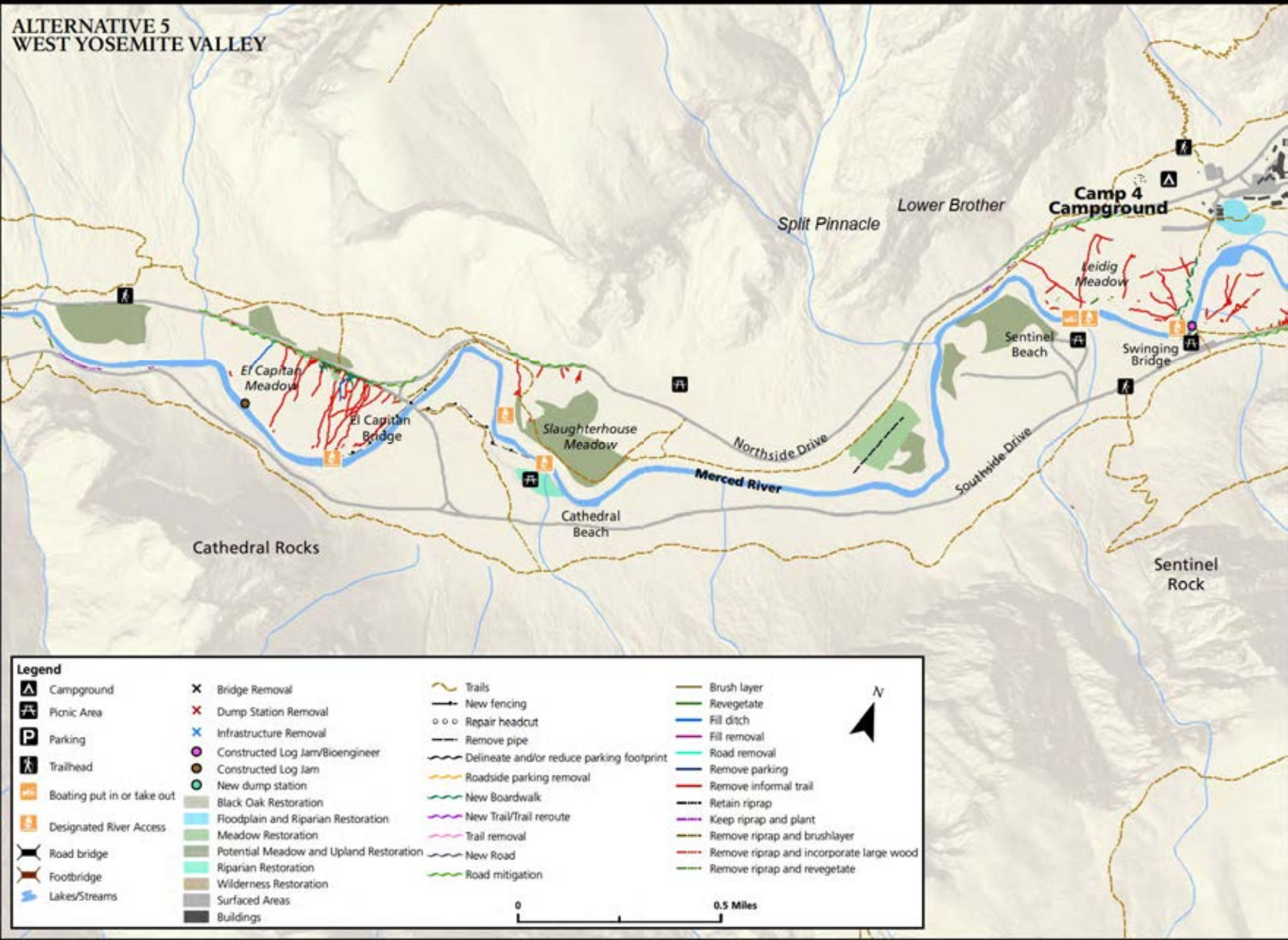
ALTERNATIVE 5
WEST YOSEMITE VALLEY



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Restoration Elements

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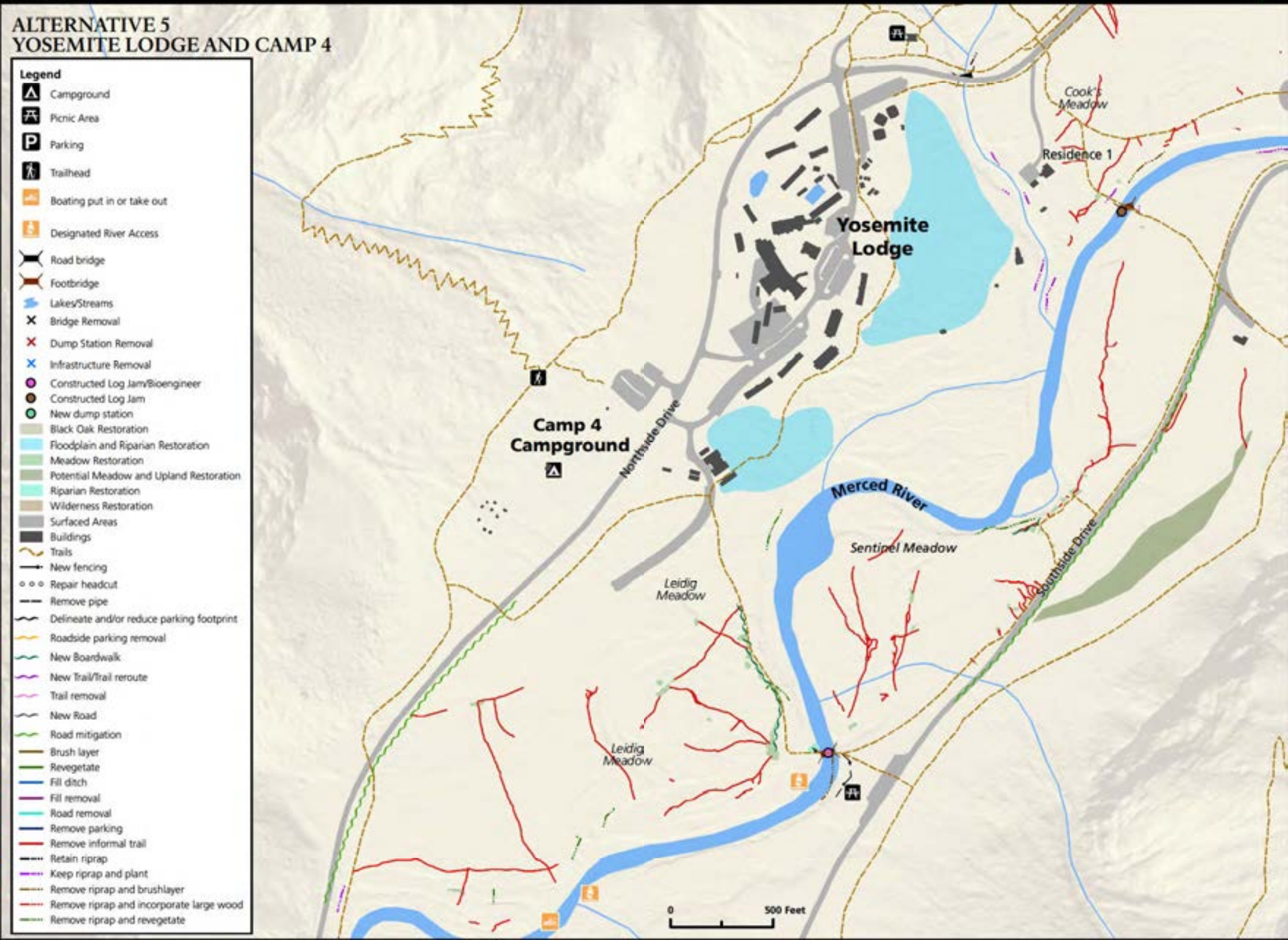
ALTERNATIVE 5
YOSEMITE LODGE AND CAMP 4



Yosemite National Park
California

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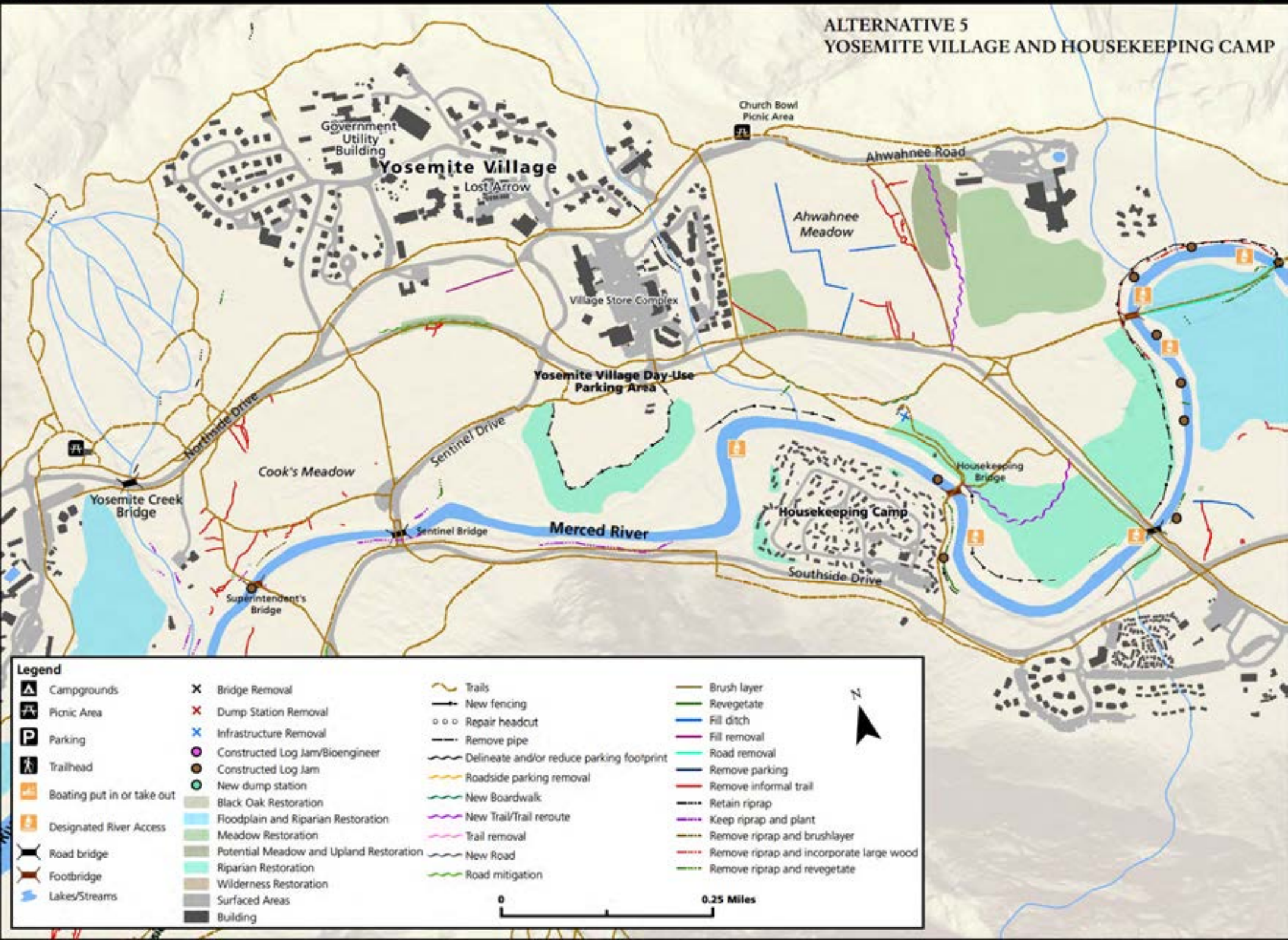

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California

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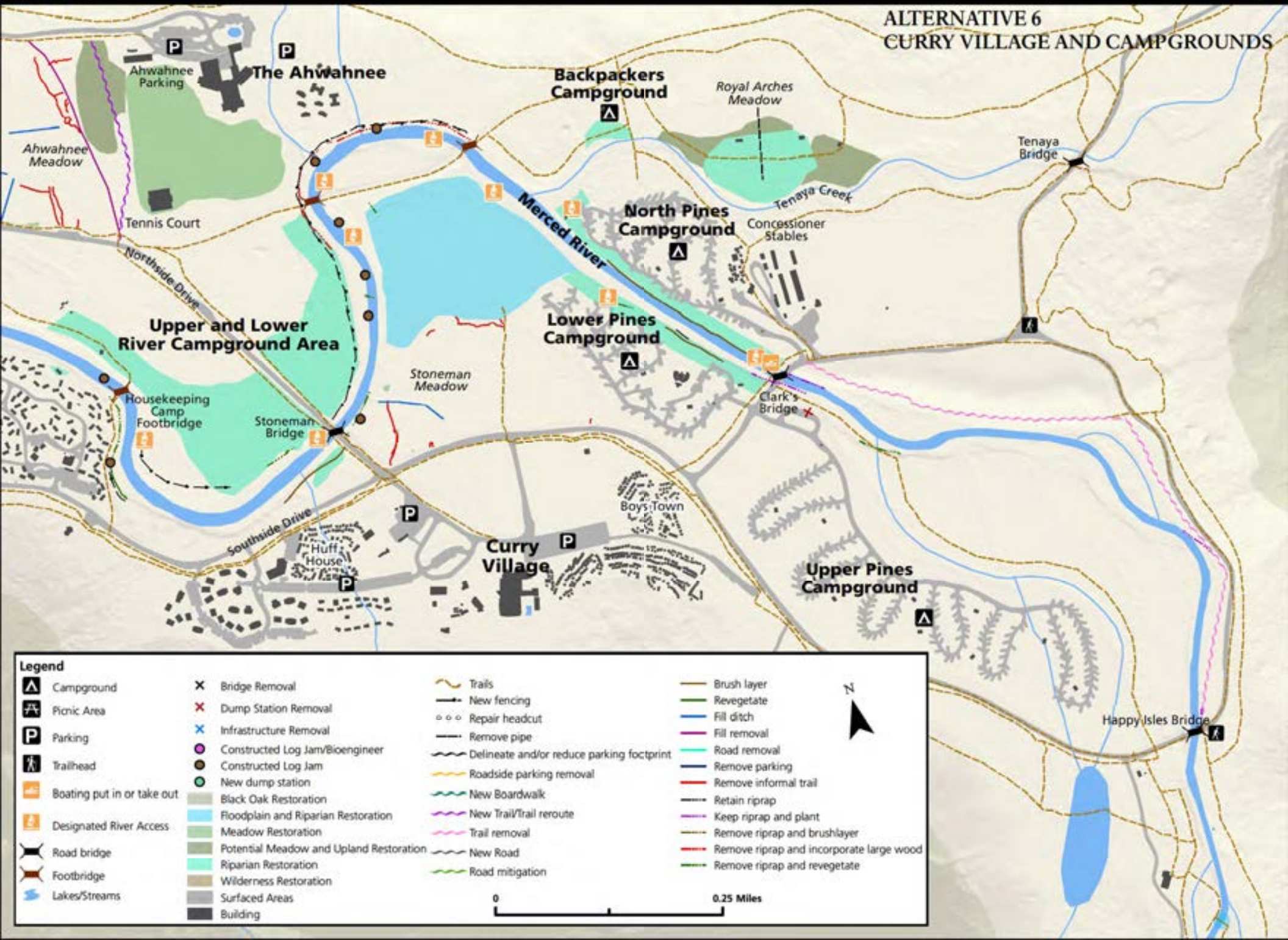

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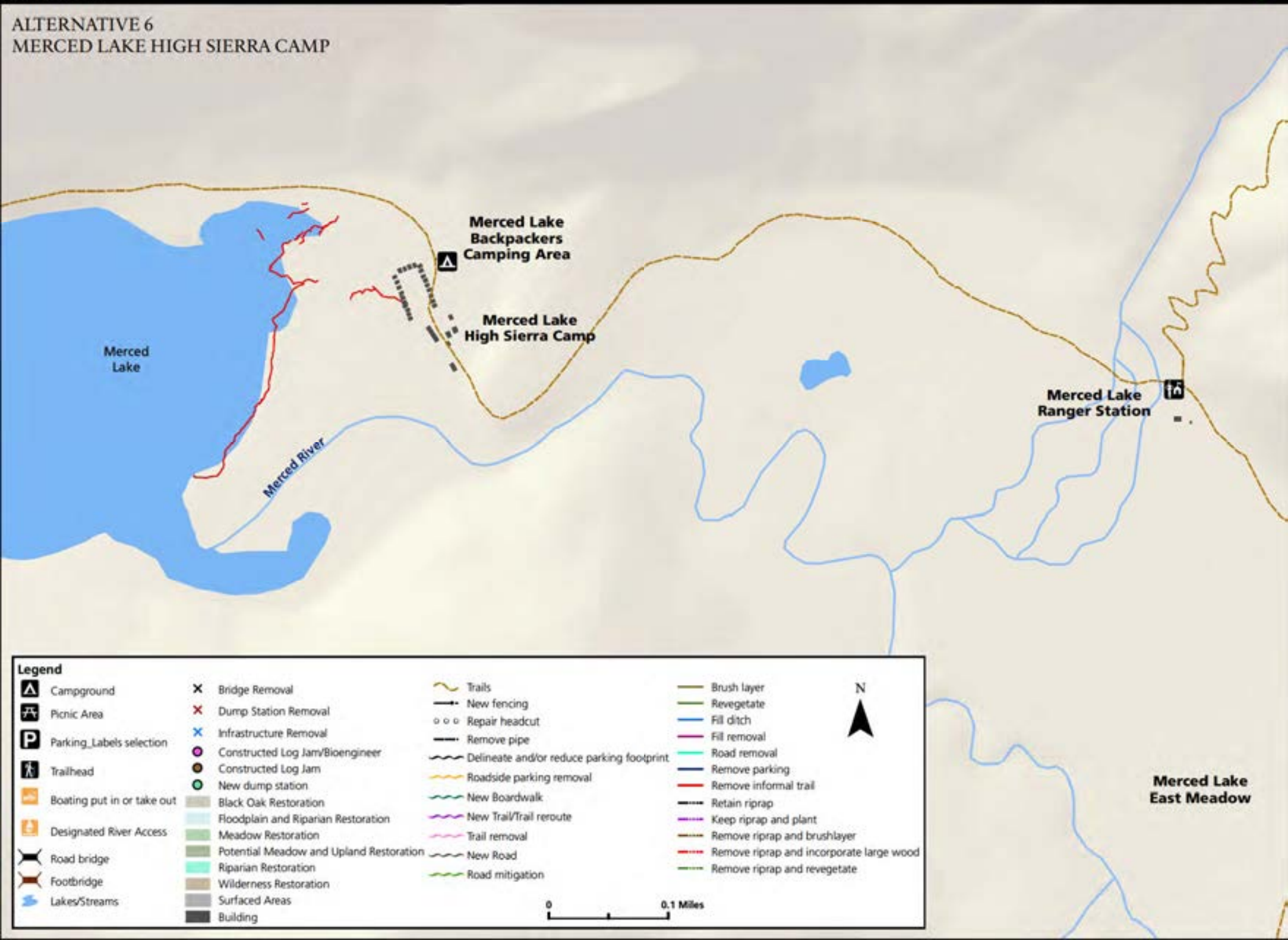
ALTERNATIVE 6
MERCED LAKE HIGH SIERRA CAMP



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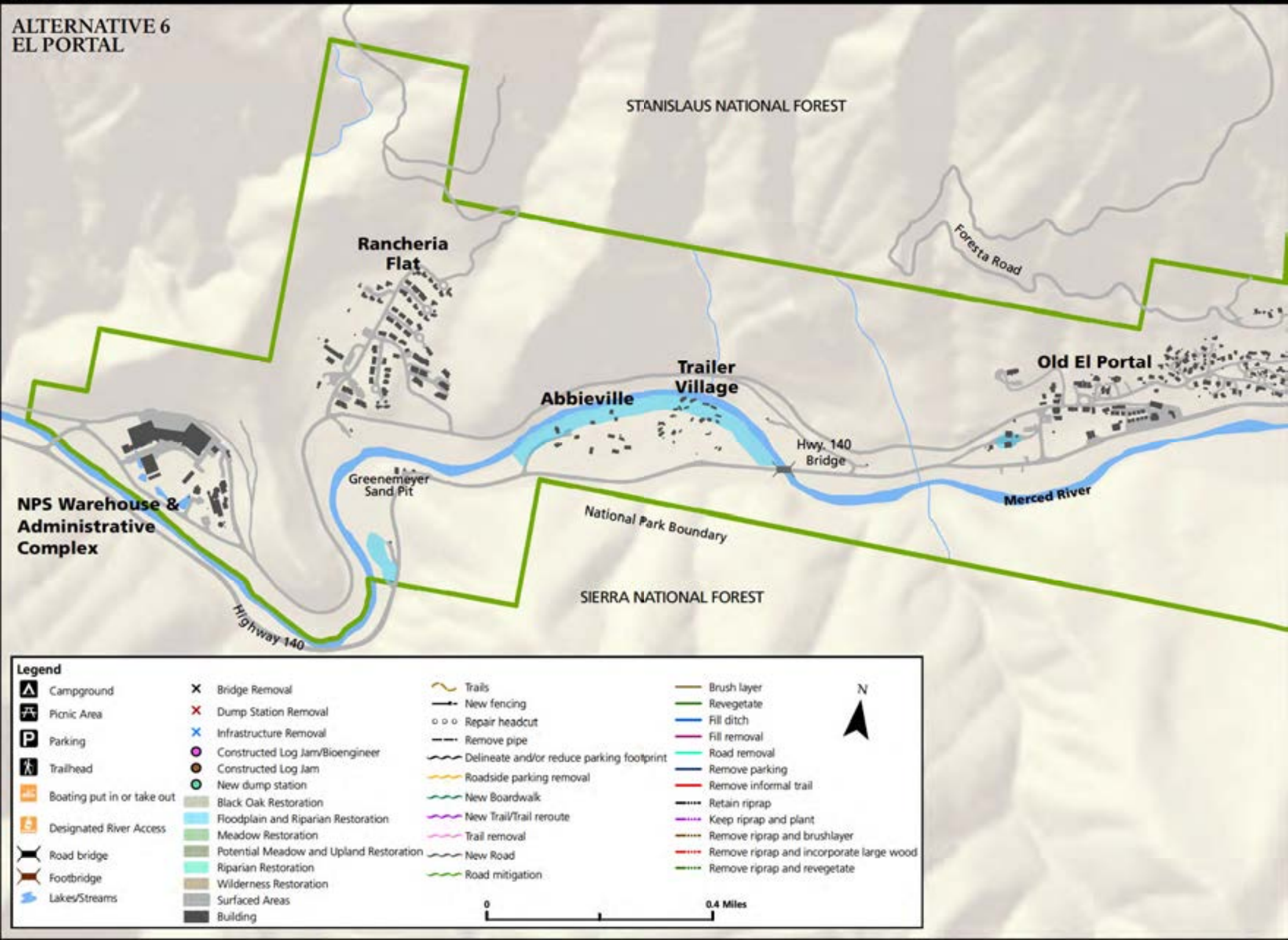

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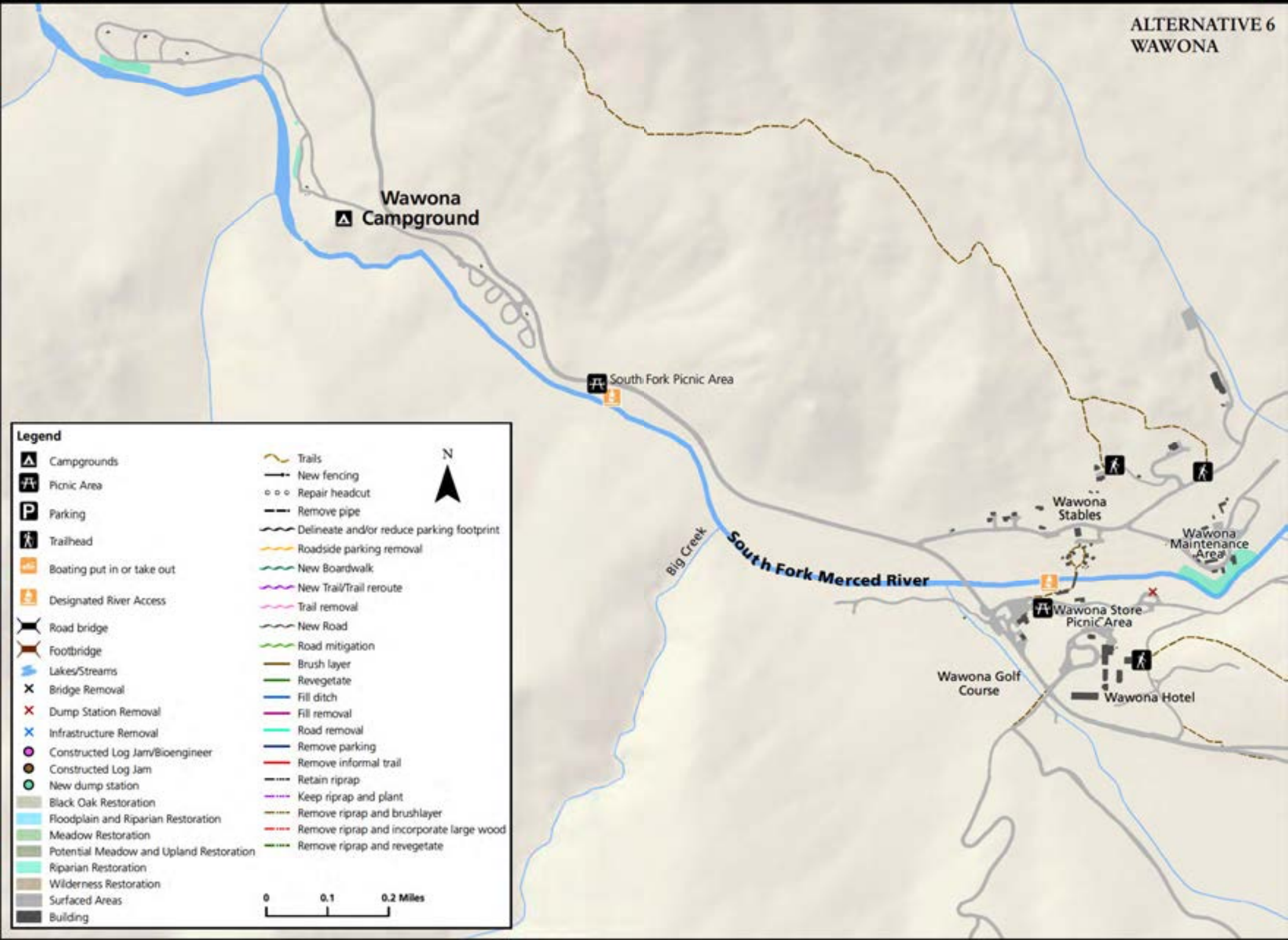

Legend

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Yosemite National Park
California

Merced River Plan Restoration Elements

National Park Service
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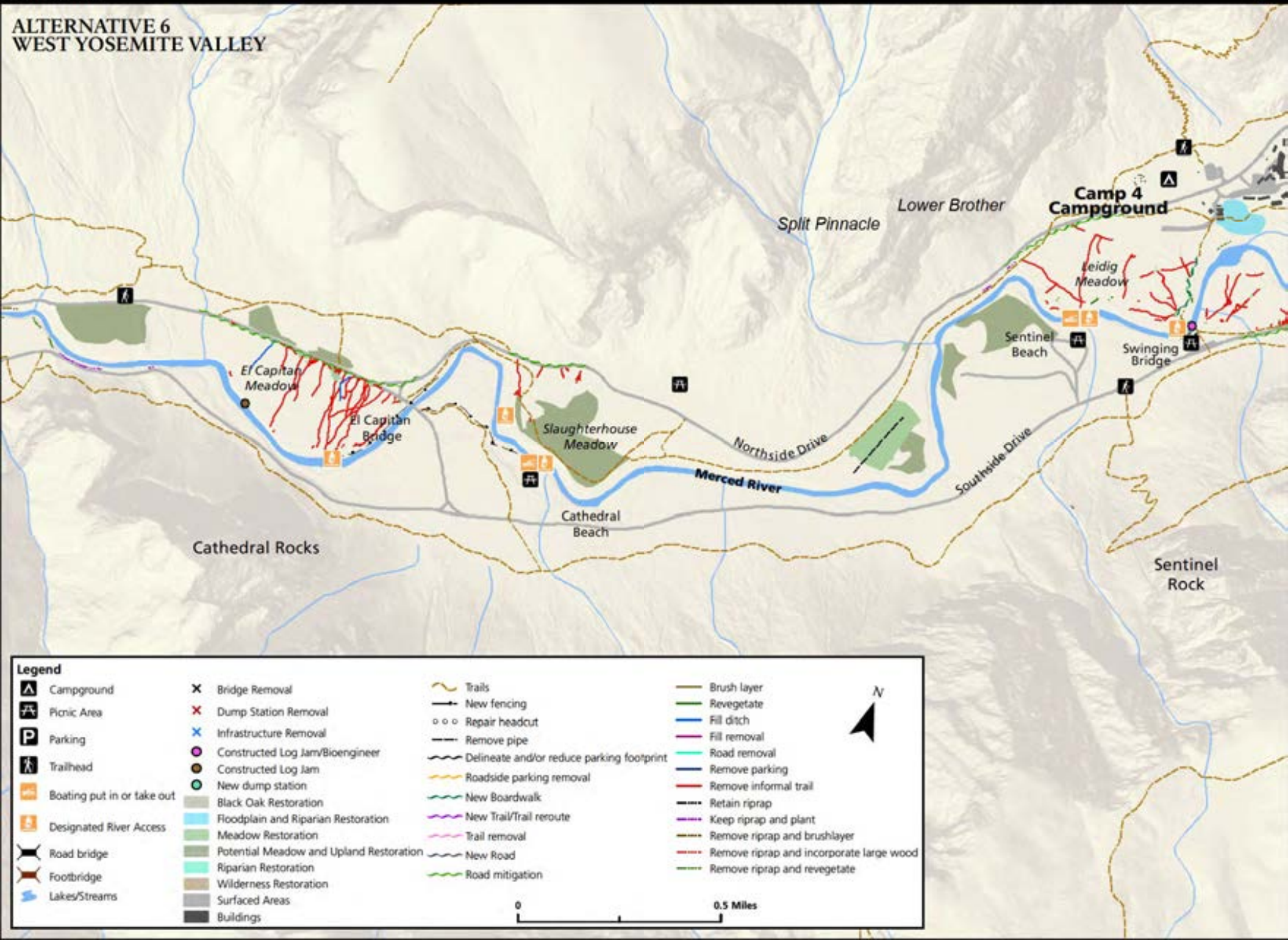
ALTERNATIVE 6
WEST YOSEMITE VALLEY



Yosemite National Park
California

Merced River Plan
Restoration Elements

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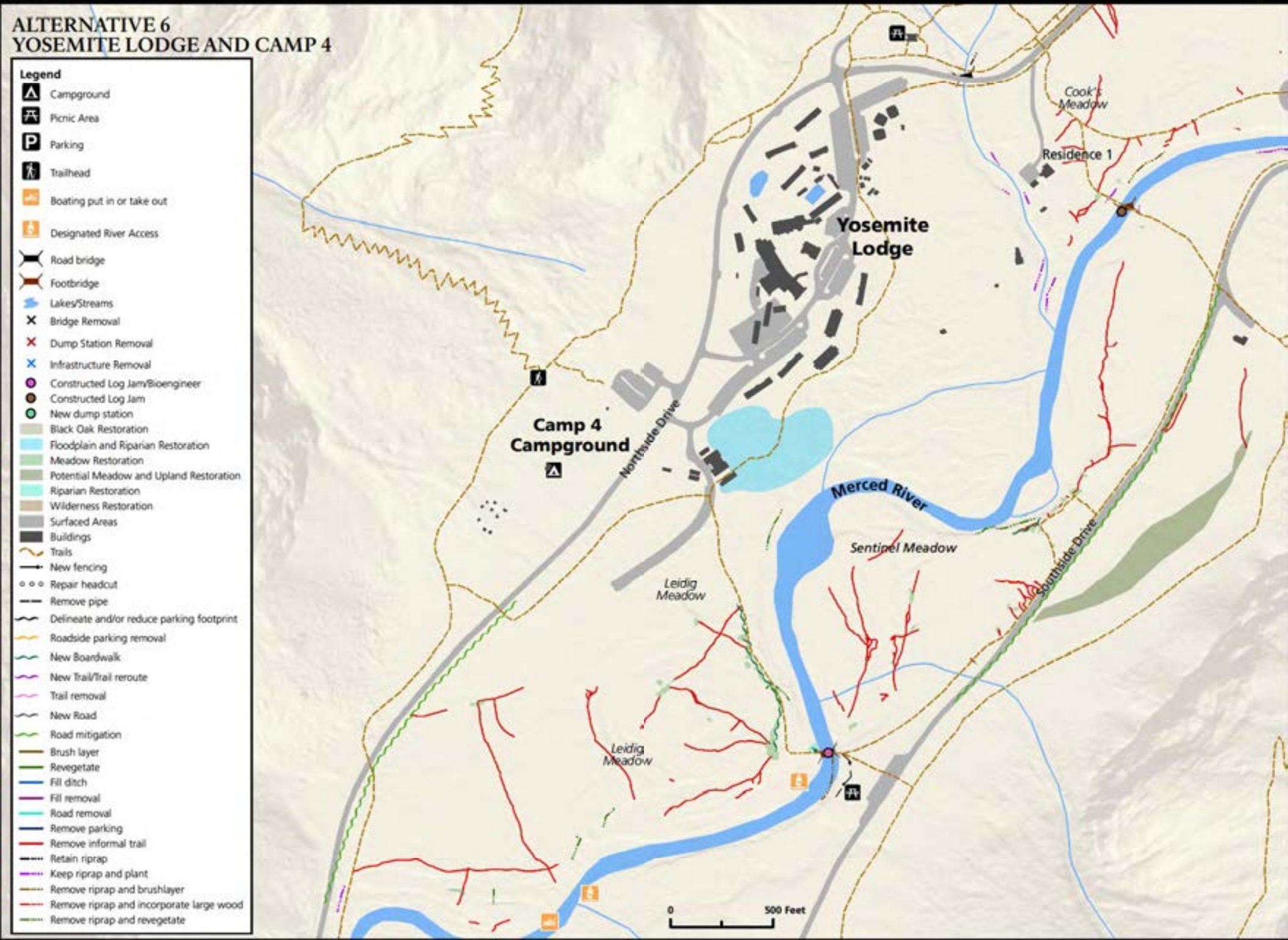
ALTERNATIVE 6
YOSEMITE LODGE AND CAMP 4



Yosemite National Park
California

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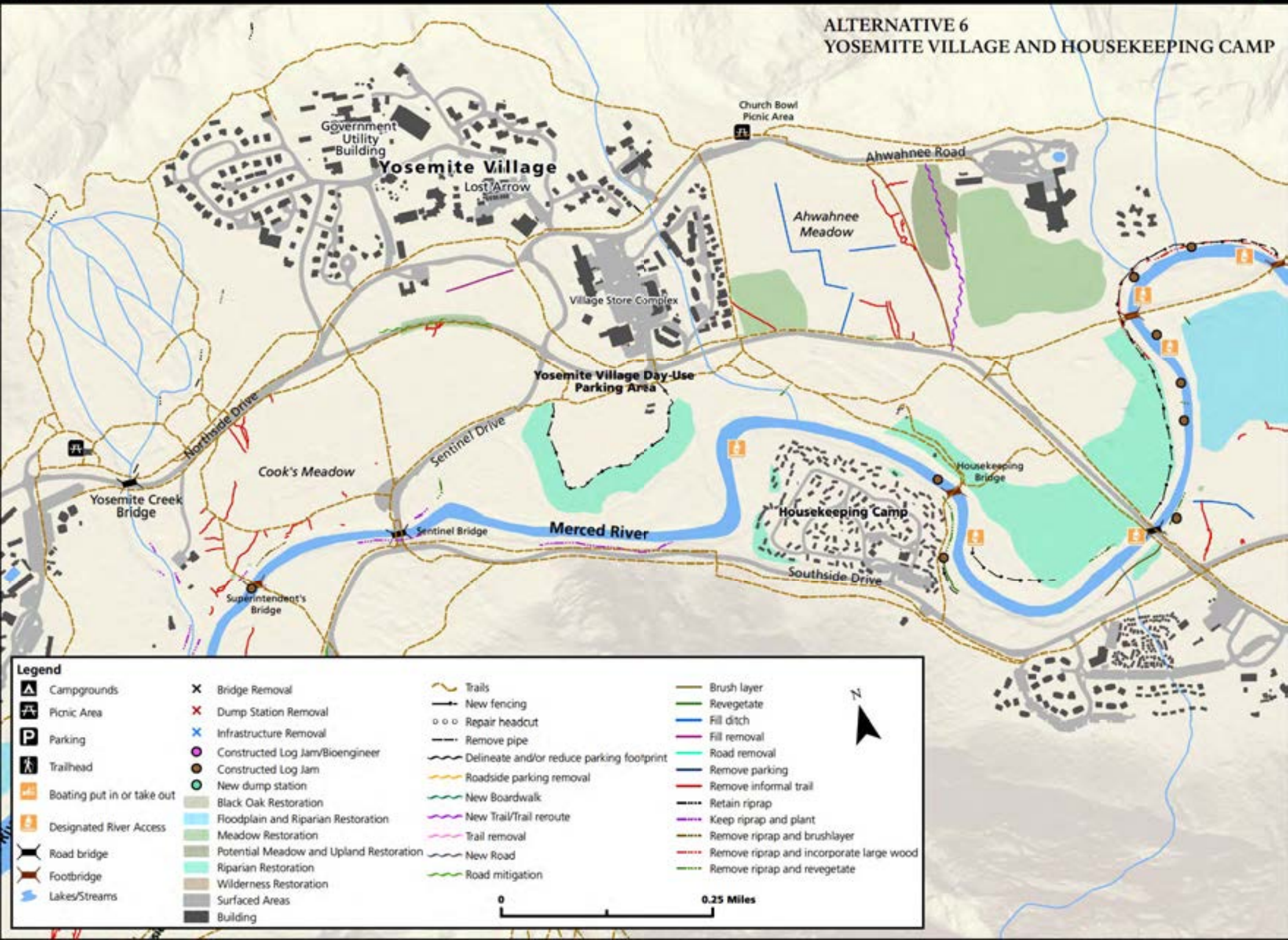
ALTERNATIVE 6
YOSEMITE VILLAGE AND HOUSEKEEPING CAMP



Yosemite National Park
California

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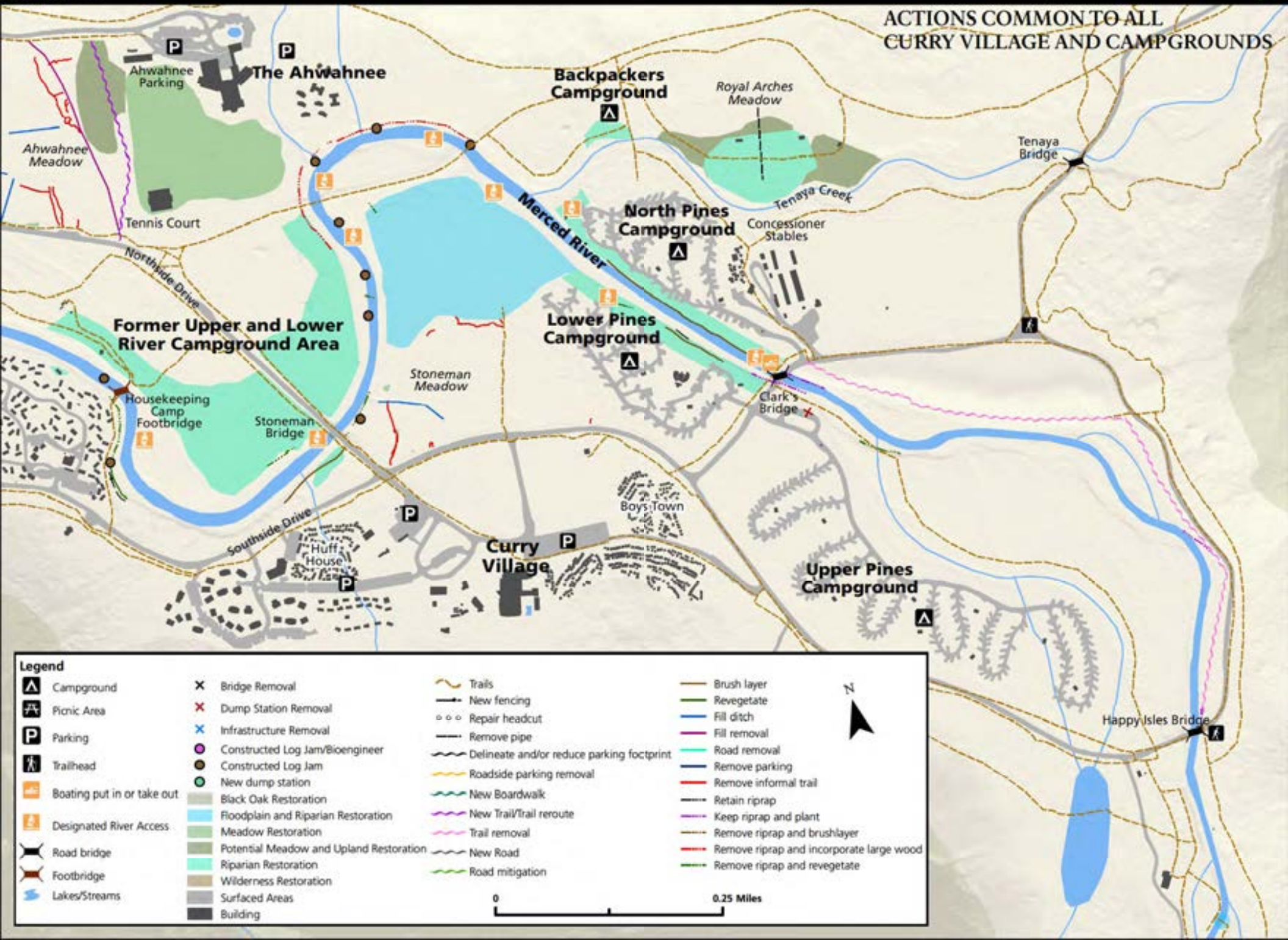

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California

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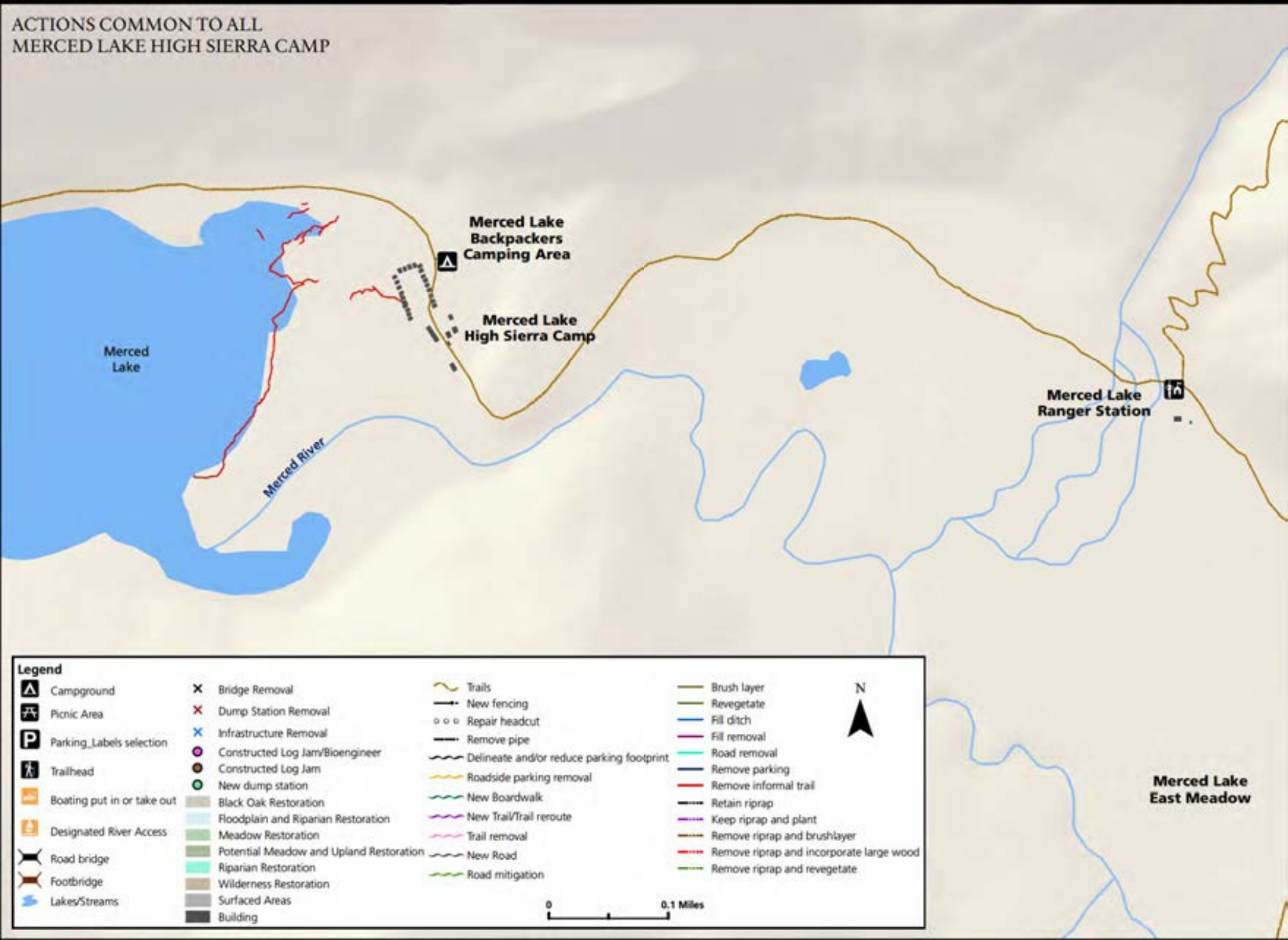
ACTIONS COMMON TO ALL
MERCED LAKE HIGH SIERRA CAMP



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California

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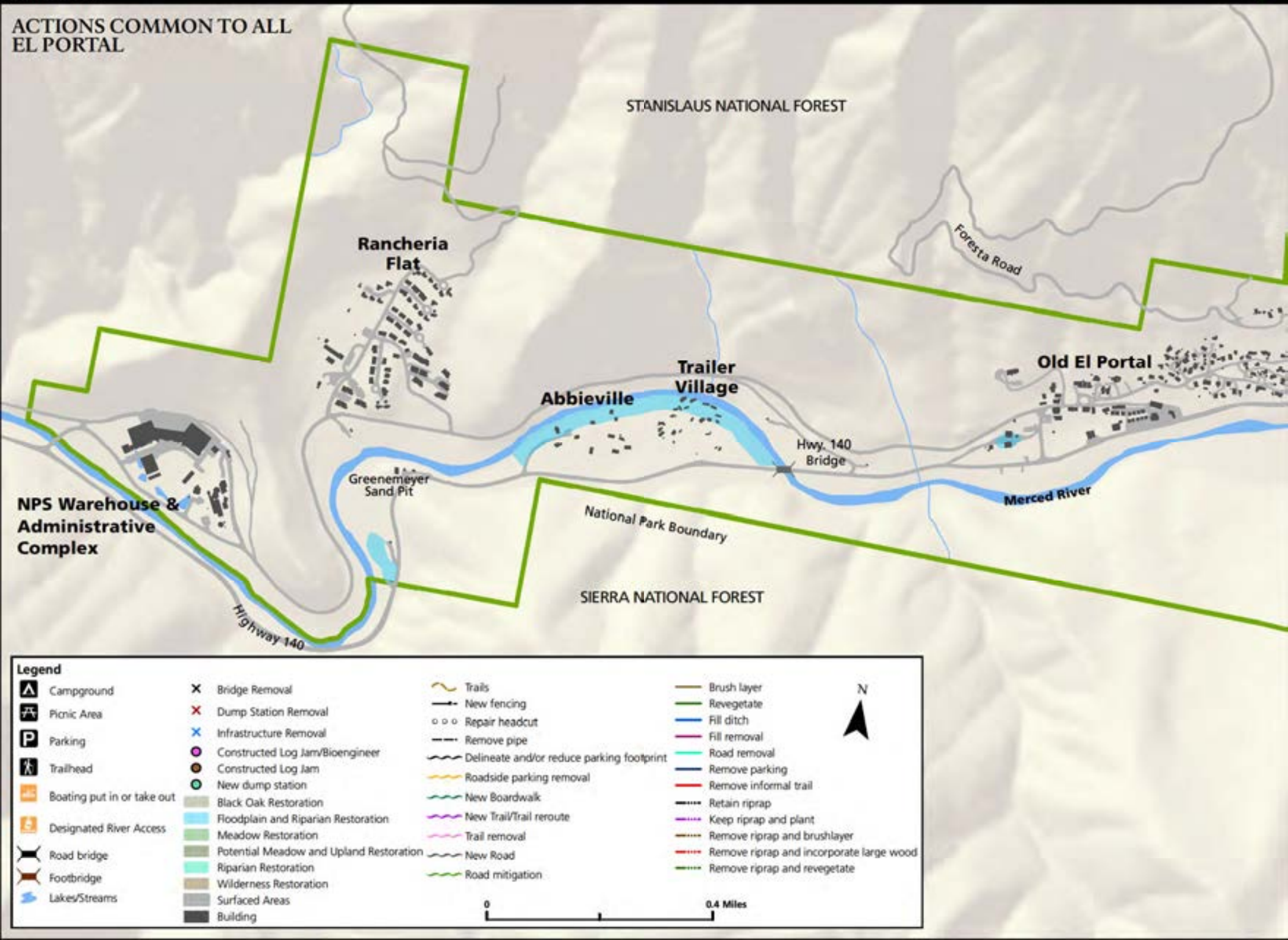

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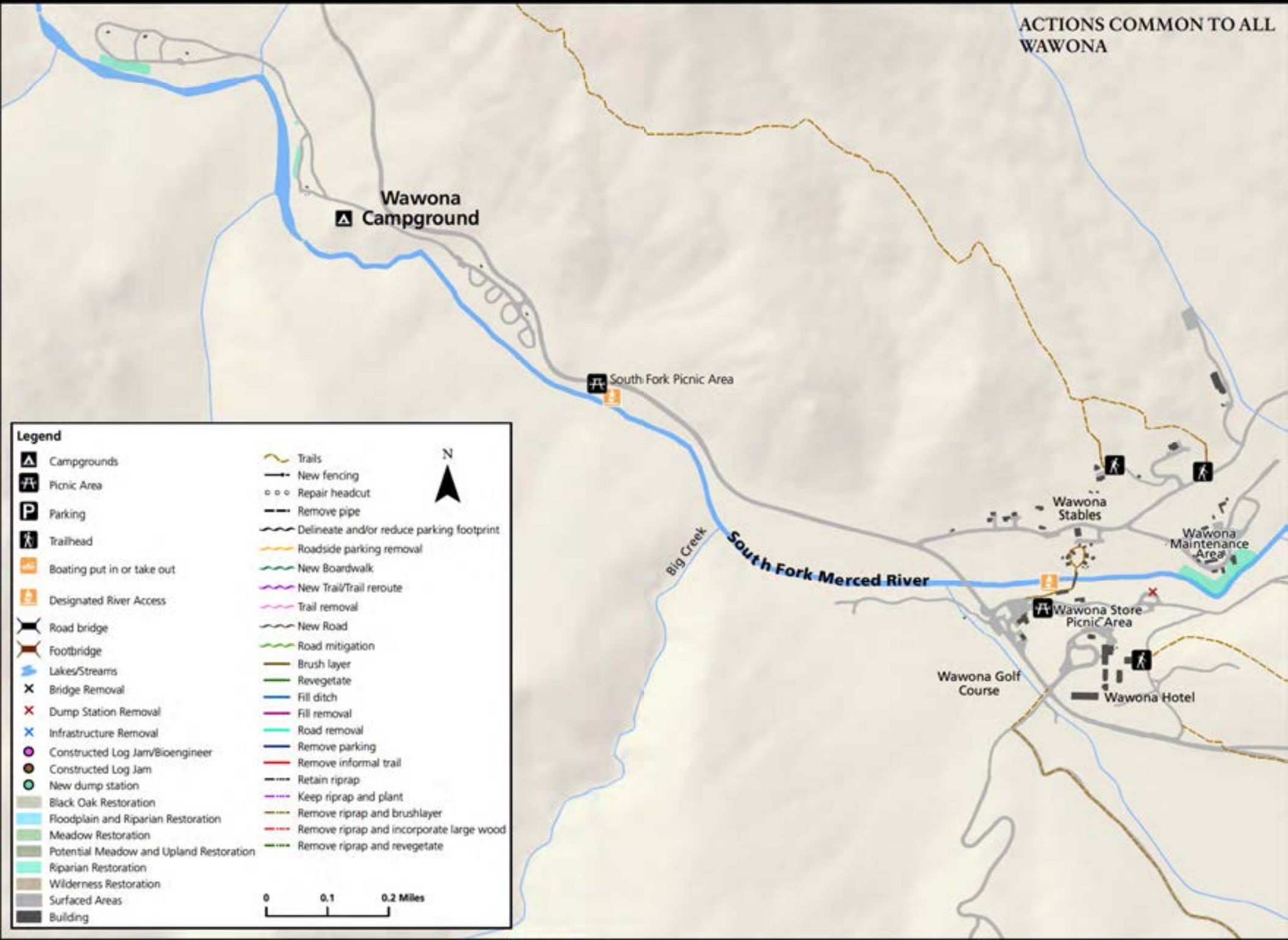

Yosemite National Park
California

Merced River Plan Restoration Elements

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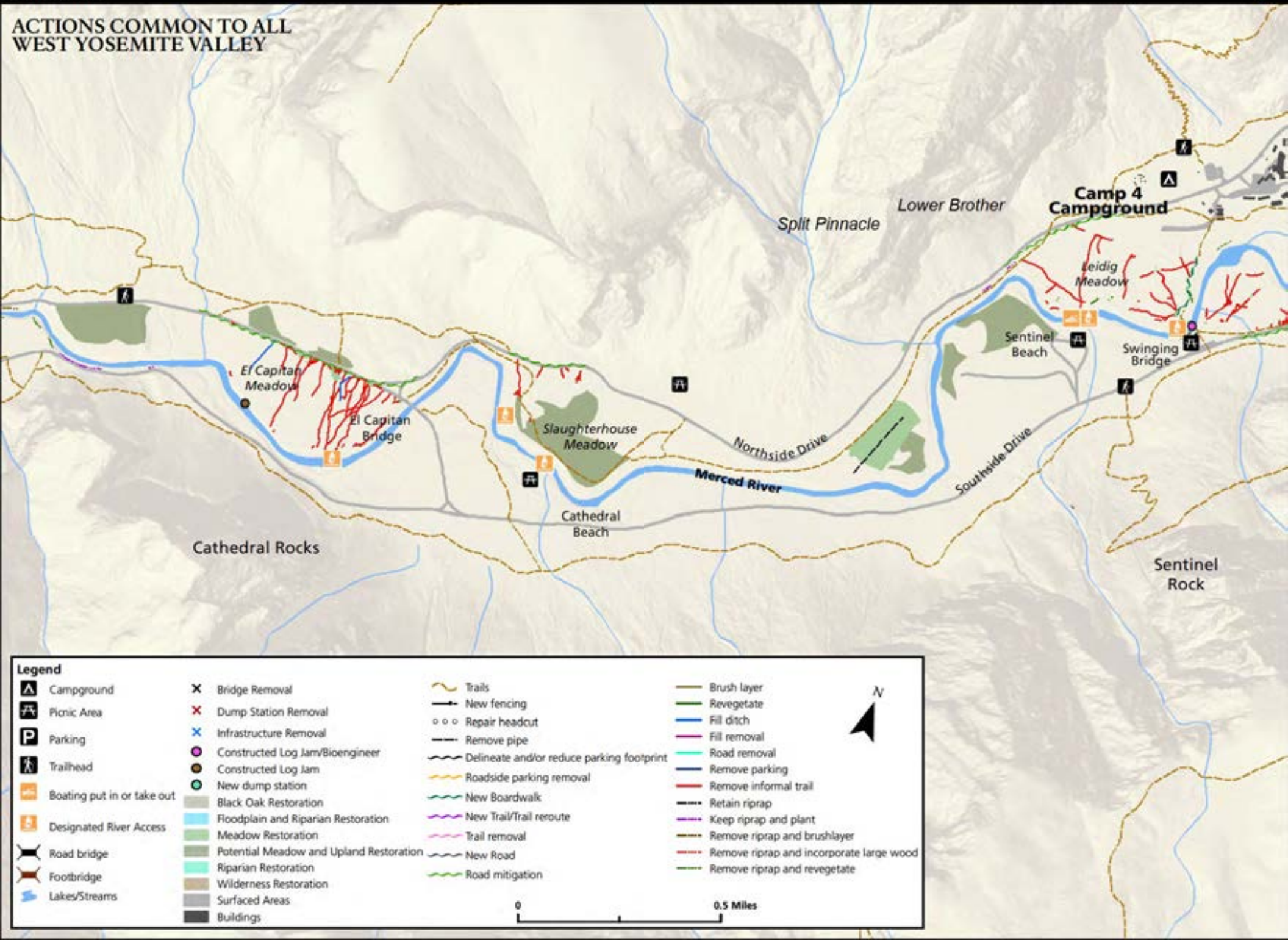
ACTIONS COMMON TO ALL WEST YOSEMITE VALLEY



Yosemite National Park
California

Merced River Plan
Restoration Elements

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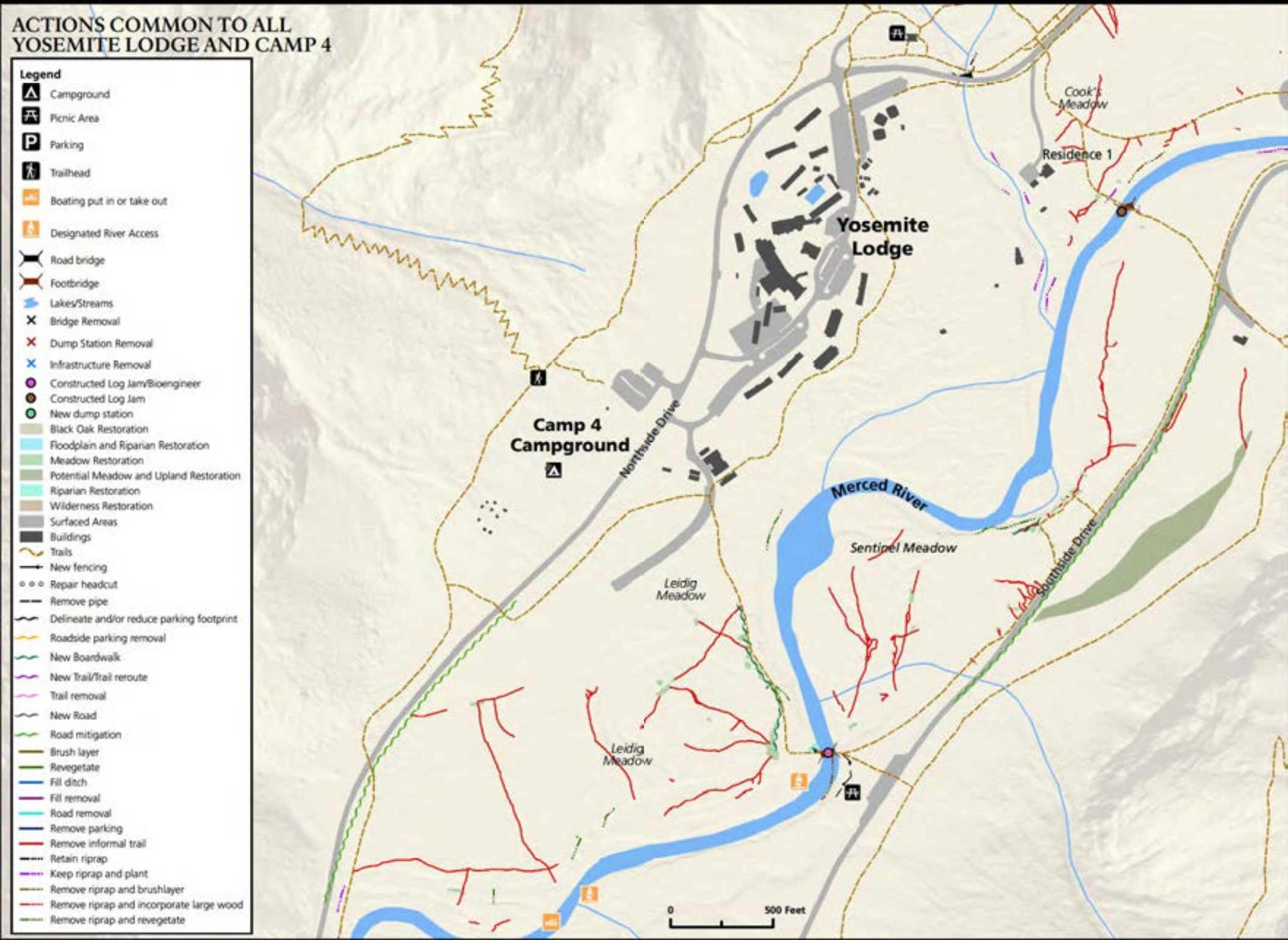
U.S. Department of the Interior

ACTIONS COMMON TO ALL YOSEMITE LODGE AND CAMP 4

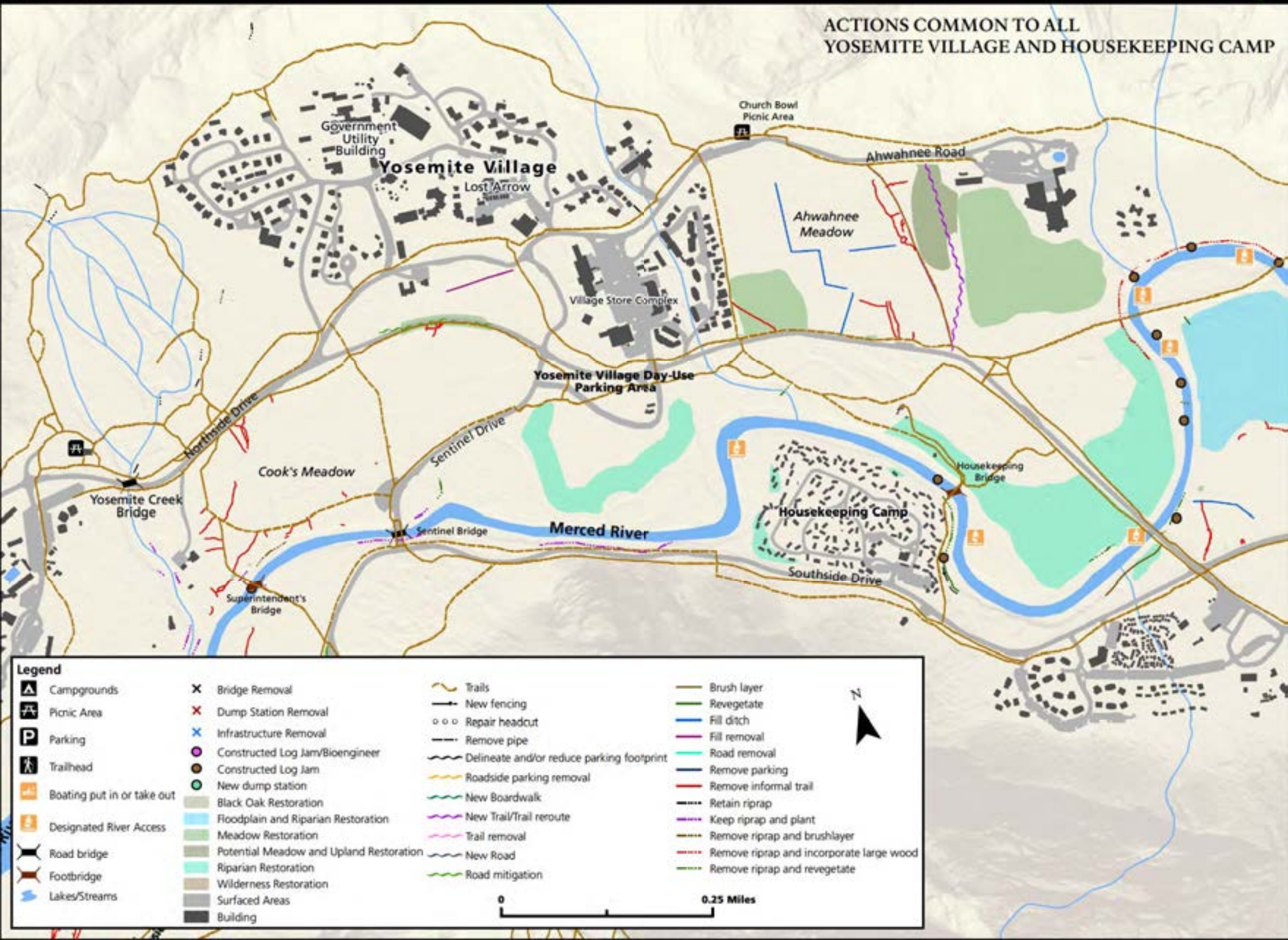


Yosemite National Park
California

Merced River Plan Restoration Elements

National Park Service
U.S. Department of the Interior

ACTIONS COMMON TO ALL YOSEMITE VILLAGE AND HOUSEKEEPING CAMP



APPENDIX F

ACOUSTICAL MEASUREMENT LOCATIONS

APPENDIX F

ACOUSTICAL MEASUREMENT LOCATIONS

This appendix includes Tables F-1 and F-2, which provide detailed descriptions of the acoustical measurement locations and corresponding levels and sources, and Figure F-1, which illustrates the acoustical measurement locations listed in the tables.

TABLE F-1: SUMMARY OF NOISE MEASUREMENTS

#	Date	Time	Location	Background Level (dBA)	Description of Sound / Noise Sources
1	9/11/99	8:30	First Merced River pedestrian bridge on John Muir Trail – base of Vernal Falls.	64.0	River sounds predominated. Also, visitor-related noise contributed somewhat. Vernal Falls was audible in the distance.
2	9/11/99	9:10	On the "mist" trail that winds up to Little Yosemite Valley adjacent to Vernal Falls.	75.5	Waterfall noise predominated. Maximum noise levels of up to 81 dBA were associated with people talking and yelling.
3	9/11/99	9:50	Viewing area atop Vernal Falls, overlooking the river and falls.	65.5	The falls produced the background sound environment and accounted for most of the measured level. Visitor-related noise sources accounted for the remainder. Maximum noise levels up to 70 dBA were associated with people talking and yelling.
4	9/11/99	10:47	Viewing area atop Nevada Falls overlooking river, trail bridge and falls.	60.5	The falls produced the background sound environment and accounted for most of the measured level. Visitor-related noise sources accounted for the remainder.
5	9/11/99	12:00	Little Yosemite Valley campground area - approximately 700 feet east from river.	40.0	Rushing water accounted for campground area background levels. Measurements were taken in an area with no people.
6	9/11/99	3:00	Bunnell Cascade area (3 miles east of Little Yosemite Valley), on trail adjacent to river.	53.5	Rushing water over granite cascades predominated. No visitor noise occurred during measurement.
7	9/12/99	11:00	Soda Springs, about 2 miles east of Merced Lake at river side.	56.0	Rushing water over granite cascades predominated. No visitor noise occurred during measurement.
8	9/12/99	11:30	0.25 miles, off trail, away from river, north of Soda Springs area.	41.5	Forest-related sounds predominated (birds, insects, and slight wind through trees). River sounds were also discernible.
9	9/12/99	16:15	One-half mile south of Washburn Lake on trail about 300 feet to river.	34.5	Background sound level reflected distant rushing water and nearby forest sources (birds, insects, and wind through trees).
10	9/12/99	16:30	On the shore at mid-portion of Washburn Lake.	30.5	No discernible sources of sound were observed. Sound level measurement approximates the limit of detection for the meter.
11	9/12/99	15:30	1 mile southeast of Washburn Lake within the overall Merced River confluence area. About 100 feet off river on trail.	35.5	Sources included distant river rapids wind in trees, and birds.
12	9/12/99	13:30	About 2 miles southeast of Washburn Lake near twin bridge at mouth of Merced Peak Fork River. About 200 feet from river.	40.5	Canyon was narrow in this area, and the river sound seemed amplified. Most sound was from river; other sources included wind in trees, birds, and high-altitude aircraft. Maximum noise level from aircraft overflight was 43 dBA.
13	9/12/99	14:30	On trail, climbing out of the Merced Peak Fork River valley, about 2.5 miles from Washburn. Gaining elevation away from river.	38.5	Rushing water sounds were noticeable but faded with elevation. Maximum noise level of 55.5 dBA was caused by an aircraft overflight directly overhead, which was clearly noticeable above the background level.

TABLE F-1: SUMMARY OF NOISE MEASUREMENTS (CONTINUED)

#	Date	Time	Location	Background Level (dBA)	Description of Sound / Noise Sources
14	9/12/99	15:10	On trail almost to saddle on the divide between the Merced Peak Fork and Triple Peak Fork.	35.0	Sources included distant rushing water and wind. Valley shape and exposed bedrock seemed to amplify river sounds.
15	9/18/99	8:40	Yosemite Falls Trail, second footbridge north of Northside Drive.	45.5	No water in Yosemite Falls Creek, people on trail, road traffic on Northside Drive (approximately 150 feet south of measurement location).
16	9/18/99	9:00	Yosemite Falls Trail, end of maintained foot trail (approximately 1,000 feet north of previous measurement).	46.5	There was no water in Yosemite Falls Creek. Visitors using the trail were the predominant source of noise. Maximum level of 65.5 dBA was associated with people talking as they walked past.
17	9/18/99	9:30	Devil's Elbow (on south side of Northside Drive adjacent to Merced River).	44.0	River sounds were relatively low since there were no rocks or rapids in this area. Very few people were around. Maximum level of 66.5 dBA associated with a bus on Northside Drive.
18	9/18/99	9:50	El Capitan Meadow approximately 1,500 feet south of Northside Drive.	38.5	The river was calm in this area, and no people were present. Most of the sound came from wind through the trees on the opposite bank of the river.
19	9/18/99	10:30	El Portal Road in the Gorge Segment of the Merced River. Along the river at the stone bridge between Arch Rock and Big Oak Flat Road.	52.0	Rushing water sounds accounted for majority of the background level. Measurements were taken in area with no people. Some vehicle noise was audible from El Portal Road, but it was relatively minor due to distance (approximately 300 feet away) and elevation (the river is approximately 40 feet below the grade of the roadway in this area).
20	9/18/99	11:15	Cascades Dam (approximately 500 feet east of dam along river area that is calm due to impoundment from the dam).	48.5	The river was calm in this area, people were fishing nearby, and some noise was attributable to their activities. Maximum noise level of 62.5 dBA was due to a bus on Northside Drive.
21	9/18/99	12:00	Swinging Bridge.	49.5	River was generally calm in this area. Visitors using the bridge or wading or skipping stones were the greatest sources of noise.
22	9/18/99	12:30	Sentinel Bridge.	58.5	Substantial amount of visitor-related noise was observed in this area. Vehicular traffic on bridge added to the level, but speeds were generally slow (10-15 mph). Idling tour buses also contributed to background noise level. Maximum noise level of 76.5 dBA was associated with tour buses that use the bridge.
23	9/18/99	14:40	Happy Isles.	59.0	Most of the noise was from people using the trails and facilities nearby.

TABLE F-1: SUMMARY OF NOISE MEASUREMENTS (CONTINUED)

#	Date	Time	Location	Background Level (dBA)	Description of Sound / Noise Sources
24	9/18/99	19:45	Midway between the river and main access road to the Upper Pines Campground.	55.0	Noise was generally from the campground and includes people talking (and yelling), generators from recreational vehicles, and moving vehicles.
25	9/19/99	6:00	Same location as #24.	32.0	No human-caused noise sources were discernible at the time this measurement was taken.
26	9/19/99	10:30	In the middle of the old Wawona Bridge.	49.5	Most of the noise was associated with the use of the Wawona General Store across the roadway (i.e., people talking or yelling, buses idling, vehicular traffic noise). Maximum noise level of 58.5 dBA was associated with a truck crossing the replacement bridge.
27	9/19/99	10:45	Along South Fork approximately 100 feet west of the covered bridge near the Pioneer History Center in Wawona.	44.0	River sounds were noticeable with a few minor rapids and cascades. Other sources of noise included people using the history center and horses and stagecoach crossing the covered bridge.

NOTE: See Figure F-1 for a map showing the locations of the noise measurement sites.

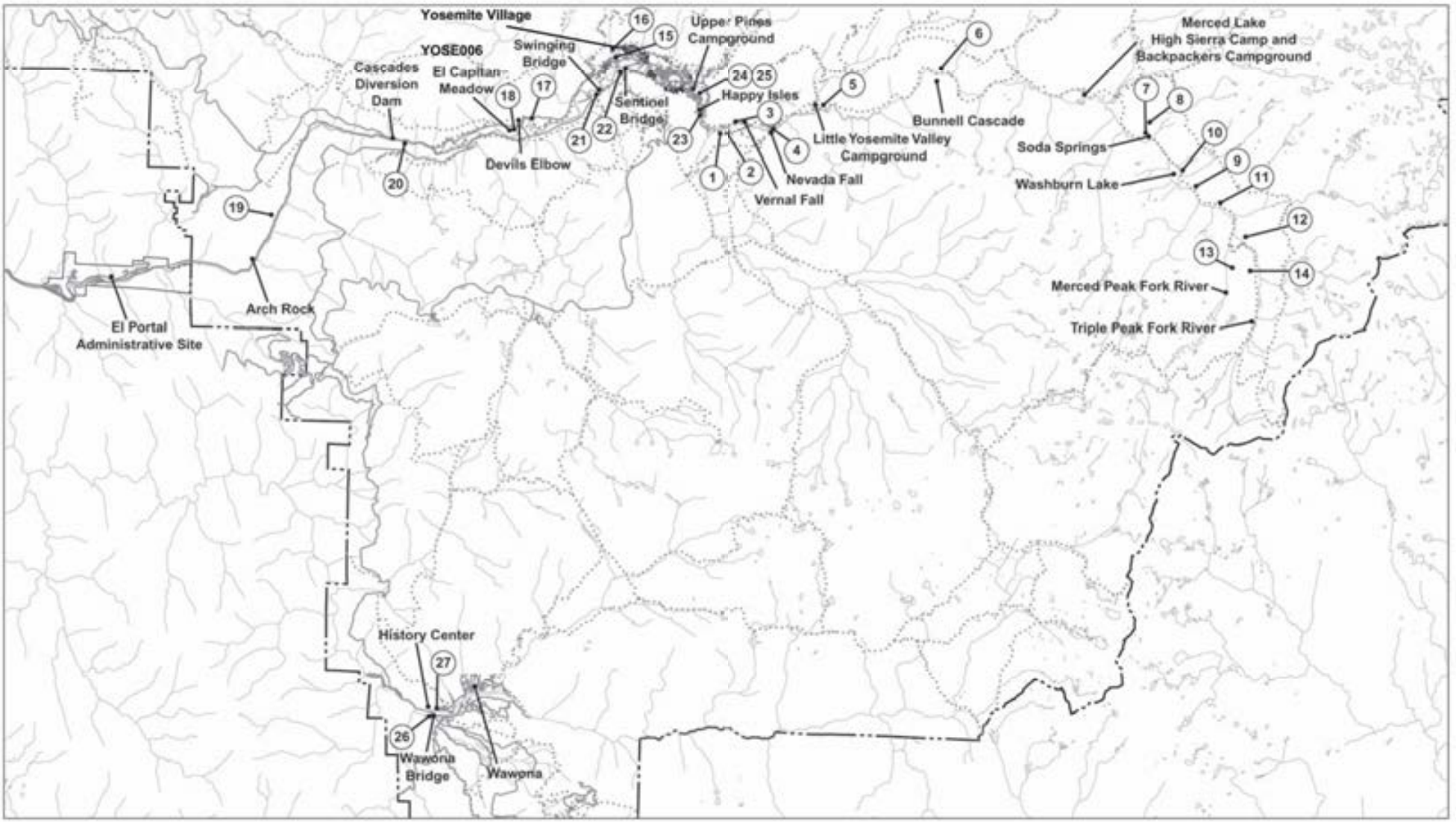
TABLE F-2: SUMMARY OF NOISE MEASUREMENTS

Site #	Year	Location – Habitat Type	Measured Median Noise Level, dB L50 Daytime/Nighttime
YOSE001	2005	White Wolf – Red fir forest	27.7/26.0
YOSE002	2005	Tuolumne Meadows – Meadow/lake open area below treeline	34.7/34.7
YOSE003	2005	Snow Flats – Subalpine/lodgepole	29.3/18.2
YOSE004	2005	Granite Lakes – Alpine tundra	27.5/20.1
YOSE005	2006	Lyell Winter Site – Meadow/lake open area below treeline	27.1/22.4
YOSE006*	2006	Yosemite Village – Developed concession area	51.6/48.0
YOSE007	2006	Hodgdon Meadow – Dense mixed conifer	28.5/18.7
YOSE008	2006	Sentinel Rock – Upper vertical canyon	31.9/29.3
YOSE009	2006	Ostrander Lake Trail – Dense lodgepole	28.6/21.3
YOSE011	2006	Olmstead Point – Vertical canyon/open lodgepole	34.6/21.3

NOTE: See Figure F-1 for a map showing the locations of the noise measurement sites.

* Site YOSE006 is the only 2005-2006 acoustical monitoring site within the Merced River Wild and Scenic River Corridor, and therefore is the only such site depicted on Figure F-1.

SOURCE: Yosemite National Park Acoustic Monitoring Report, 2005 & 2006.



Prepared for:
National Park Service
Department of the Interior

Prepared by:
MIG, Inc.
Environmental Science Associates
July 2012

Figure F-1
Noise Measurement Locations

Draft Merced Wild and Scenic River
Comprehensive Management Plan/EIS

APPENDIX G

ON-ROAD VEHICLE CRITERIA POLLUTANT AND GHG EMISSION ESTIMATES

Scenario Year: 2020

All model years in the range 1976 to 2020 Highest (Most Conservative) EMFAC2007 (version 2.3)

Passenger Vehicles (pounds/mile)		Delivery Trucks (pounds/mile)	
CO	**0.00444247**	CO	**0.00799617**
NOx	**0.00040506**	NOx	**0.00831802**
ROG	**0.00052463**	ROG	**0.00122382**
SOx	**0.00001073**	SOx	**0.00002733**
PM10	**0.00009550**	PM10	**0.00035054**
PM2.5	**0.00006279**	PM2.5	**0.00027128**
CO2	**1.10456157**	CO2	**2.85148109**
CH4	**0.00004495**	CH4	**0.00005330**

Emission Factors for On-Road Passenger Vehicles and Delivery Trucks
Projects in the SCAQMD
Derived from Peak Emissions Inventory (Winter, Annual, Summer)

Emissions (pounds per day) = N x TL x EF
where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)
All the emission factors account for the emissions from start, running and idling exhaust.
In addition, the ROG emission factors include diurnal, hot soak, running
and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear.
Delivery truck Efs are an average for MDV and HDV and were used to estimate emissions for buses

# Visitor Vehicles/day		Air Pollutant Emissions	Visitors – lbs/yr (during high and shoulder seasons (240 days))	Buses - lbs/yr (based on 7 day/wk, 50 wk/yr ops)	tons per year	Minus Alt 1
ALTERNATIVE 1						
	18675.83	CO	433226.5723	4437.076634	219	0
		NOx	39501.13542	4615.666883	22	0
VMT/day	406330.1	ROG	51161.13987	679.0979535	26	0
		SOx	1046.08355	15.16690013	1	0
Annual Bus #s	10565	PM10	9312.69502	194.5154942	5	0
Annual Bus VMT	554900	PM2.5	6123.415904	150.5314838	3	0
From GHG Inventory		CO2	107715988.6	1582286.856	49576.86 MT	
		CH4	4383.345218	29.57545526	2.001667 MT	
					49619 CO2E	0
ALTERNATIVE 2						
	14314.17	CO	332048.2278	4926.842256	168	-51
		NOx	30275.8022	5125.145341	18	-4
VMT/day	311433.3	ROG	39212.65895	754.0569545	20	-6
		SOx	801.7748937	16.84102634	0	-1
Annual Bus #s	11265	PM10	7137.752102	215.9861628	4	-1
Annual Bus VMT	616150	PM2.5	4693.316451	167.1471864	2	-1
From GHG Inventory		CO2	82559347.46	1756940.073	38245.22 MT	
		CH4	3359.632359	32.84000137	1.538799 MT	
					38278 CO2E	-11341
ALTERNATIVE 3						
	13935.42	CO	323262.2978	4926.842256	164	-55
		NOx	29474.71051	5125.145341	17	-5
VMT/day	303192.9	ROG	38175.0998	754.0569545	19	-7
		SOx	780.5600896	16.84102634	0	-1
Annual Bus #s	11265	PM10	6948.888603	215.9861628	4	-1
Annual Bus VMT	616150	PM2.5	4569.132232	167.1471864	2	-1
From GHG Inventory		CO2	80374843.57	1756940.073	37254.34 MT	
		CH4	3270.737156	32.84000137	1.498477 MT	
					37286 CO2E	-12333
ALTERNATIVE 4						
	16089.17	CO	373223.2132	5668.487342	189	-30
		NOx	34030.09333	5896.641293	20	-2
VMT/day	350052	ROG	44075.14736	867.5662988	22	-4
		SOx	901.1974077	19.37613174	0	-1
Annual Bus #s	12490	PM10	8022.854971	248.4988896	4	-1
Annual Bus VMT	708900	PM2.5	5275.301899	192.3081076	3	0
From GHG Inventory		CO2	92796956.48	2021414.944	43008.88 MT	
		CH4	3776.236942	37.7834569	1.73001 MT	
					43045 CO2E	-6574

# Visitor Vehicles/day		Air Pollutant Emissions	Visitors – lbs/yr (during high and shoulder seasons (240 days))	Buses - lbs/yr (based on 7 day/wk, 50 wk/yr ops)	tons per year	Minus Alt 1
ALTERNATIVE 5						
	17812.08	CO	413190.0125	8914.933752	211	-8
		NOx	37674.22333	9273.755646	23	1
VMT/day	387537.5	ROG	48794.95713	1364.437391	25	-1
		SOx	997.7025944	30.4731969	1	0
Annual Bus #s	20015	PM10	8881.986511	390.8187502	5	0
Annual Bus VMT	1114900	PM2.5	5840.210309	302.4464792	3	0
From GHG Inventory		CO2	102734166.2	3179116.266	48041.45 MT	
		CH4	4180.617213	59.42273395	1.923249 MT	
					48082 CO2E	-1537
ALTERNATIVE 6						
	18801.25	**CO**	436135.8847	9362.719464	223	4
		NOx	39766.40341	9739.564522	25	3
VMT/day	409058.8	**ROG**	51504.71007	1432.971335	26	0
		SOx	1053.108474	32.00382657	1	0
Annual Bus #s	20715	**PM10**	9375.233979	410.4490758	5	0
Annual Bus VMT	1170900	**PM2.5**	6164.537411	317.6379787	3	0
From GHG Inventory		**CO2**	108439350.2	3338799.207	50701.71 MT	
		CH4	4412.781363	62.40746182	2.029911 MT	
					50744 CO2E	1125

APPENDIX H

SCENIC VISTA MANAGEMENT IN THE MERCED RIVER CORRIDOR

APPENDIX H

SCENIC VISTA MANAGEMENT IN THE MERCED RIVER CORRIDOR

The *Scenic Vista Management Plan for Yosemite National Park Environmental Assessment* (SVMP), completed in 2010, inventoried 181 potential vista points throughout the park, outside of wilderness and chiefly along the major roads. The plan outlined a programmatic framework for prioritizing and prescribing the work to be completed at each of the viewpoints necessary to obtain a desirable vista. The 2010 F*inding of No Significant Impact (FONSI*) stipulates that the final determination of vista points for the Merced Wild and Scenic River corridor would be deferred to the comprehensive river management plan completion. Once an alternative has been selected in a Record of Decision, the management actions included in that selected alternative will be incorporated into the Merced River Plan to guide the future management of scenic values in the Merced River corridor.

This approach captures the programmatic direction, methods outlined in the *SVMP*, and analyzes the viewpoints from the perspective of the Wild and Scenic Rivers Act mandate to protect and enhance the values of the Merced Wild and Scenic River.

The scenery along the Merced River—considered an outstandingly remarkable value—offers outstanding views of the river valley, adjacent meadows, glaciated geology and hanging valleys. The locations where these tremendous views intersect with frequent visitation are often along roads and near historic buildings. As originally inventoried in the *SVMP*, eighty-three of these sites were located in, or adjacent to the Wild and Scenic River corridor of the Merced River. Upon analyzing these vista locations within the context of the Merced River Plan and considerations for river values (including free flow, water quality, and outstandingly remarkable values), thirty-two of these sites were removed from consideration. Reasons for removal range from sites encroaching on declared Wilderness areas, removal of the viewing area under proposed actions of the MRP, or sites being very similar to other nearby vistas. The inventory of sites includes analysis of each site with a Visual Resource Assessment (VRA) score that looks at a vista site with factors such as current infrastructure, numbers of scenic icons and quality of the view, and quantifies them for comparison. The sites are then prioritized by VRA score as high, medium or low based on their score up to eighteen. Low priority sites, scoring seven and below, are also be removed from consideration. The remaining sites are summarized and the proposed work actions analyzed regarding how the management of scenic vistas will take place as described under the *Scenic Vista Management Plan*, and comply with Merced River Plan to protect and enhance river values. As stated in the SVMP, the goal is not to remove all trees within a vista, but to remove a minimal number in order to allow a view, retain a natural appearance, and with the least invasive management practicable.

This appendix describes the impact over the projected life, typically twenty years for management plans, of the MRP. Some vistas are currently open, but will likely be encroached during this time frame, given past trends of conifer growth. The descriptions of estimated impact of trees removed during initial management for each vista point are by species and size as they are in 2012. Trees less than 6” diameter at breast height (dbh) can be removed in order to maintain a vista without additional

compliance, and are not included in the estimates. If more trees than estimated over 6" dbh need to be removed, additional compliance will need to be completed.

Following tree removal, the work area will be revegetated with native vegetation, if necessary, the soil will be decompacted, and the area recontoured. Stumps must remain in place to provide soil stability. In order to preserve the natural aesthetic, stumps will be flush cut and buried. Seed collection and plant salvage will occur as necessary for revegetation after site work and tree removal are complete. An annual work plan will continue to be done that will describe the specific actions involved in initial management of removing larger trees, and maintenance involving revegetation or removing trees under 6" dbh. Approximately ten to twenty vista points will be done each year. This work plan will be posted on-line as described in the *SVMP*.

In the initial management of a vista, some downed trees may be left, but this will generally be no more than one tree in twenty. Trees which are removed will be used for traditional cultural purposes, chipped, left as woody debris in the river, or hauled away. If chipped, wood chips would remain on site (outside of meadows) as mulch (no more than 1 inch deep). The small diameter vegetation is to be lopped and scattered such that any saw marks are not visible from the vista point. Remaining woody debris which maybe left will depend on the conditions at the time. Woody debris left on site must adhere to the *Fire Management Plan* guidelines of tons per acre of downed fuel levels.

Maintaining these viewpoints will further enhance the visitor's recreation enjoyment and enhance their connection to the natural world along the Merced River. At the same time, management of scenic vistas at these select locations must protect biological, cultural values (archeological sites and places of significance to American Indian tribes and groups), water quality, and the free-flowing condition of the river. Management will involve removal of trees, and when completed following careful review and attention to ORV protection will ensure that all other biological and cultural values are minimally affected. The outstandingly scenery will continue to evolve in response to natural ecological processes.

Providing and maintaining viewing areas at existing infrastructure (such as roadside turnouts) lessens the frequency of visitors creating or using social trails in order to see a view that is referred to in existing signs and publications. Many park visitors' (87%) primary purpose when visiting the park is to take a scenic drive (Littlejohn et al 2006). Removing a limited number of trees in locations which support visitor use will give visitors an incentive to remain on durable surfaces and therefore not tread in more sensitive areas. Through visitors remaining on durable surfaces, the environment will be better protected and biological resources will be enhanced. Vista management in the Merced WSR corridor should reestablish vistas that once existed, without degrading other outstandingly remarkable values. What follows is a description of the work plan for each of the viewpoints established for the Merced River corridor. Each work plan provides

- A description of the viewpoint and its specific location
- Ecological considerations, particularly as they pertain to vegetation
- A summary of the trees greater than 6" dbh that currently are, or potentially could, obscure the vista over the next twenty years. Trees are described by species and size dbh as of 2012.

RES-3-002

Cascade Falls Viewpoint

(8-Medium)

Location: El Portal Road
View: Cascade Falls

Cascade Falls is located three miles east of the Arch Rock entrance station. The falls can be viewed from a formal viewing point located adjacent to the Cascade Falls parking area. The current view of the falls is narrow and should be opened to allow better visibility. Mature trees and shrubs in front of the viewing area and falls could obscure the view in the near future. This site contains mature California Black Oak, which is a species that will not be removed in a medium value vista. The oaks are growing between the viewing area and the waterfall, but they are unlikely to become much taller, and as a result will likely obscure only the bottom of the falls.

Figure H-1: Cascade Falls. NPS 2009

The El Portal Road was constructed in 1908, but turnouts were not added until 1932. Trees established before 1932 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 35. This site rated a medium priority with an average VRA score of 8 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	1	1	1	-	3
Cedar	6	-	-	1	7
Live Oak	-	1			1
Red Fir	3	-	-	-	3
Ceanothus (shrub)	Trim 1				
				Total	**14**

RES-2-120
Bridalveil Fall Approach
(10.25-High)
Location: Southside Drive
View: Bridalveil Falls

The Bridalveil Fall Approach is located on Southside Drive, 0.30 miles east of Pohono Bridge. Southside Drive heads directly to the falls before turning to the east at Bridalveil Meadow. This is one of the first waterfalls visitors see when entering the Yosemite Valley. The current view of the fall is very narrow and can only be seen along a brief segment of road. Further encroachment of mature trees from the sides of the road could block the view completely. This site contains a large number of cedar, fir and ponderosa saplings/seedlings that would need to be removed in the initial management of the site.

Figure H-2: Bridalveil Fall Approach. NPS 2009

The road in its current configuration was completed in 1928. Trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 152. This site rated a high priority with an average VRA score of 10.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	6	1	1	2	10
Cedar	27, Trim 3	-	-	-	27
Fir	10	1	-	-	11
Live Oak	2	1	-	-	3
Dogwood	1	-	-	-	1
				Total	**52**

RES-2-119
Roosevelt Turnout
(10.5-High)
Location: Southside Drive
View: Bridalveil Falls

The Roosevelt Turnout is located 0.45 miles east Pohono Bridge. The focal point of the Roosevelt Turnout is Bridalveil Falls with a portion of Bridalveil meadow in the foreground. This sign commemorates the general location of where John Muir and Theodore Roosevelt camped in 1903. The current view is completely obscured by many conifers going back to the Wawona Road. A number of trees less than 6" dbh would also be removed during initial management of the site.

Figure H-3: Roosevelt Turnout. NPS 2009

The road in its current configuration was completed in 1928. Trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 156. This site rated a high priority with an average VRA score of 10.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	11	14	4	1	30
Cedar	76	11	8	2	1	98
Fir	23	3	1	1	-	28
					Total	**156**

RES-2-127
Tunnel View
(15.2-High)
Location: Wawona Road
View: Yosemite Valley


Figure H-4: Tunnel View. NPS 2009

Tunnel View is located east of the Wawona Tunnel, 1.5 miles southwest from the intersection of Southside Drive and Wawona Road. Tunnel View is one of the most popular vistas in the park with a magnificent panoramic view of the Yosemite Valley and iconic natural landmarks such as Bridalveil Fall, El Capitan, and Half Dome. It is part of the Yosemite Road Guide (W2). The area was rehabilitated and the vista opened in 2008. There are no trees currently obscuring the vista, although some trees could obscure the view in the future. This site should be monitored and the trees listed below could be removed if they further obscure the view in the future.

Wawona Tunnel was constructed in 1933. Trees established before 1933 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 49. This site rated a high priority with an average VRA score of 15.2 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	TOTAL
Cedar	5	-	5
Ponderosa	2	1	3
		Total	**8**

RES-2-078
Bridalveil Straight
interpretive sign
(13-High)
Location: Southside Drive
View: Bridalveil Falls

The Bridalveil Straight interpretive sign is located 0.25 miles east of the intersection of Southside Drive and Wawona Road. This vista is listed as a contributing feature to the Yosemite Valley Historic District. The focal point of the vista to be managed is Bridalveil Fall to the south. This location also has spectacular view of El Capitan to the east, over California Black Oaks. It is unlikely the oak trees will grow tall enough to obscure the view to El Capitan, but this area should also be monitored in the future for conifer encroachment.

Figure H-5: Bridalveil Straight. NPS 2009

The road in its current configuration was constructed in 1928. Trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 38. This site rated a high priority with an average VRA score of 13 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	3	1	-	4
Cedar	8	31	1	5	45
Fir	-	3	-	3	6
Black Oak	Trim				
				Total	**55**

RES-2-075
Bridalveil Fall Foot Bridge
(7.25-Medium)
Location: Bridalveil Trail
View: Bridalveil Fall

The Bridalveil Fall Foot Bridge is located on the Bridalveil Fall trail at the base of the fall. This vista is from one of three bridges built in 1913 at the waterfall. These are the oldest remaining bridges in the valley. The intention in managing this vista is not to create a broad view, but a focused and intimate view of the fall.

Trees established before 1913 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 37. This site rated a medium priority with an average VRA score of 7.25 out of 18.

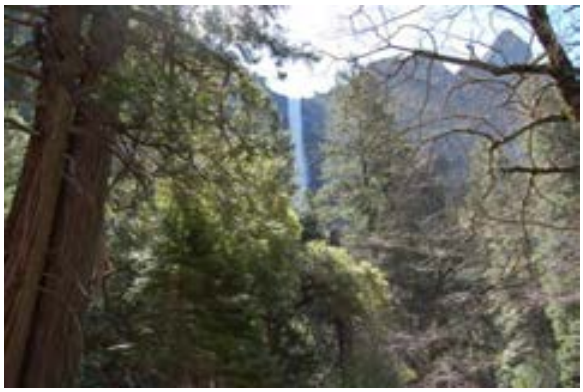


Figure H-6: Bridalveil Fall Foot Bridge. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<40" dbh	<50" dbh	TOTAL
Douglas fir	1	-	-	2	3
Black Oak	Trim				
Live Oak	-	2	-	-	2
Cedar	-	-	1	-	1
				Total	**6**

RES-2-121

Cathedral Spires Turnout

(7.5-Medium)

Location: Southside Drive
View: Cathedral Spires and Rock

The Cathedral Spires Turnout on Southside Drive is located 1.3 miles east of the Wawona Road and Southside Drive intersection. This vista is listed as a contributing feature of the Yosemite Valley Historic District.

The Valley Loop Road in its current configuration was constructed in 1928.

Trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 225. This site rated a medium priority with an average VRA score of 7.5 out of 18.

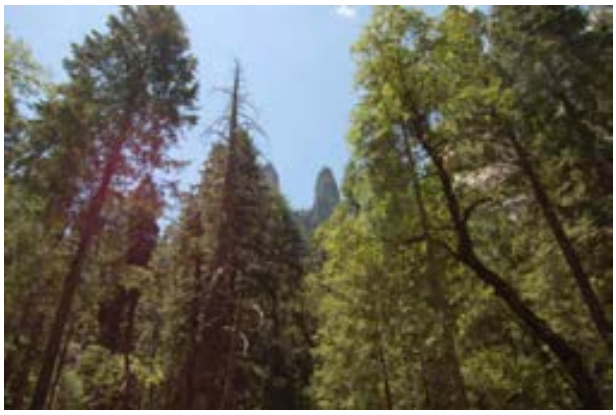


Figure H-7: Cathedral Spires. NPS 2012

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Cedar	5	-	6	1	-	12
Douglas Fir	-	6	1	-	1	8
Ponderosa	-	1	-	-	-	1
					Total	**21**

RES-2-158
Cathedral Beach Parking
(9.75-Medium)
View: Three Brothers

The Cathedral Beach Parking area is located on Southside Drive 0.25 miles east of the El Capitan Crossover.

This vista is located on the terrace above the restroom. There were two vistas inventoried from this area, this one, and another from the beach. The recommendation is to manage the vista from this location and not the vista from the beach. The view to Three Brothers is similar, and new parking could be built in this location to better accommodate visitors. Trees established before 1928 should not be removed when managing this vista.

Figure H-8: Cathedral Beach Parking. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 226. This site rated a medium priority with an average VRA score of 9.75 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	6	2	5	9	2	24
Cedar	42	11	3	9	-	65
Fir	1	2	1	-	-	4
Black Oak	-	1	-	-	-	1
					Total	**94**

RES-2-091

El Capitan Postage Stamp Turnout

(9.5-Medium)

Location: Northside Drive
View: El Capitan, Merced River

The El Capitan Postage Stamp Turnout is located on Southside Drive 0.45 miles east of the El Capitan Drive intersection. The history of this vista began in 1868 when Carlton Watkins captured a photograph of El Capitan a few feet from the current turnout in 1868. This photograph was used in a postage stamp in 1934. It was a popular vista at one time, but is now almost completely obscured with conifers. There are a large number of dead trees in the area and the intention is to remove the smaller trees that have less habitat value and also reduce the fuel load. Several large deciduous riparian trees partially obscure the view, but will not be removed for vista management because of their high habitat potential.

Figure H-10: El Capitan Postage Stamp. NPS 2009

The road was completed in 1928, so trees established before then should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 3. This site rated a medium priority with an average VRA score of 9.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Cedar	53 (28?)	4	4	9	3	73
Ponderosa	1	4	5	8	4	22
Live Oak	1	-	-	-	-	1
					Total	**96**

SNAGS TO REMAIN

Tree Species	<12" dbh	<20"dbh	<40" dbh	TOTAL
Cedar		1		1
Oak		1	1	2
Willow	2			2
			Total	**5**

SNAGS TO REMOVE

Tree Species	<12" dbh	TOTAL
Cedar	15	15
	Total	**15**

RES-2-092
Ferry Bend Turnout
(12-High)
Location: Southside Drive
View: El Capitan, Merced River

Ferry Bend Turnout is located on Southside Drive 1.17 miles east of the El Capitan Road intersection. The turnout is near where Ira Folsom began a ferry in 1871 to cross the Merced. The vista of the river and El Capitan is a contributing feature to the Yosemite Valley Historic District. The vista should be managed from the turnout to allow people to enjoy the view with minimal damage to the vegetation. Trees established before 1928 should not be removed from this location for vista management.

Figure H-11: Ferry Bend. NPS 2009

This site has a considerable number of snags from a managed burn in 2004. The area surveyed is approximately 4 acres. The intention is to remove snags less than 12" dbh, and retain any larger snags. This would retain 23 snags between 20" and 40" dbh, and remove 53 snags less than 12" dbh. There would also be a considerable number of cedar saplings and trees less than 6" dbh removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 44. This site rated a high priority with an average VRA score of 12 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	<60" dbh	<70" dbh	TOTAL
Ponderosa	6	23	59	62	14	3	3	170
Cedar	41	56	30	21	5	-	1	154
Fir	-	1	6	2	2	1	-	12
							Total	**336**

SNAGS TO REMOVE

Tree Species	<12" dbh	TOTAL
Ponderosa Snag	4	4
Cedar Snag	48	48
Fir Snag	1	1
	Total	**53**

SNAGS TO RETAIN

Tree Species	<20" dbh	<30" dbh	TOTAL
Ponderosa Snag	3	-	3
Cedar Snag	17	3	20
		Total	**23**

RES-2-115
Sentinel Beach Picnic Area
(11.25-High)
Location: Southside Drive
View: Sentinel Rock

Sentinel Beach is adjacent to the Sentinel Beach picnic area located off of Southside Drive 1.7 miles east of the intersection of El Capitan Road. This is a popular destination for picnicking, and is also the pullout and shuttle stop for raft rentals. Trees established before 1928 should not be removed from this location.


Figure H-12: Sentinel Beach. NPS 2009

An alternative picnic and parking area is considered under the MRP at the location initially surveyed. It is recommended that this site is managed within the new developed area because it would create a better, more durable platform for visitors' to enjoy the vista.

The site was inventoried as part of the Scenic Vista Management Plan as site number 22. This site rated a high priority with an average VRA score of 11.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	1	3	7	11
Cedar	-	5	5	10
			Total	**21**

RES-2-093
Four Mile Trailhead
(10.5-High)
Location: Northside Drive
View: Yosemite Falls

The Four Mile Trail Trailhead is located on Southside Drive 1.75 miles east of the El Capitan Crossover. The trail was completed in 1872, although some alteration in the trail took place in the 1920s, and the trailhead was likely rerouted at that time.

The road in its current configuration was completed in 1928. Therefore trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 32. This site rated a high priority with an average VRA score of 10.5 out of 18.

Figure H-13: Four Mile Trailhead. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	TOTAL
Cedar	12	9	3	24
			Total	**24**

RES-2-126
Swinging Bridge
(11.5-High)
Location: Southside Drive
View: Yosemite Falls, Merced River

The Swinging Bridge view point is located within the Swinging Bridge picnic area. The picnic area is located two miles east of El Capitan Crossover. There has been a footbridge in this location since 1938. An older bridge 200 feet downstream was destroyed in a flood which resulted in the construction of the 1938 bridge. The current structure was built in 1966.

Vista should be monitored and maintained, but no removal of trees larger than 6" dbh is

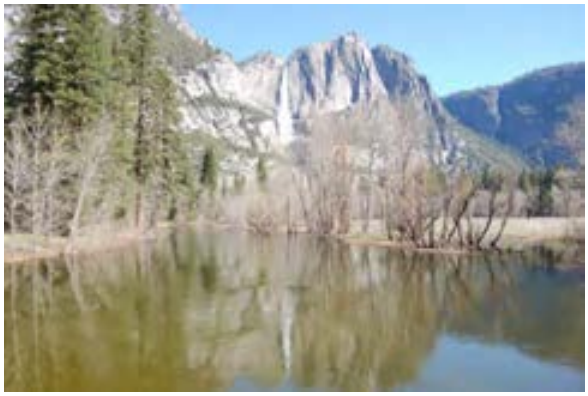


Figure H-14: Swinging Bridge. NPS 2009

recommended. Trees that are partially obscuring the lower falls are riparian deciduous trees that shade the river and have high habitat potential.

The site was inventoried as part of the Scenic Vista Management Plan as site number 23. This site rated a high priority with an average VRA score of 11.5 out of 18.

RES-2-118
Sentinel Meadow Boardwalk
(13.5-High)
Location: Southside Drive
View: Yosemite Falls, Merced River

The Sentinel Meadow Boardwalk is located on Southside drive 2.3 miles east of the El Capitan Crossover. Views from Sentinel Meadow are listed as contributing features in the Yosemite Valley Historic District. The vista is above the south bank of the Merced River, looking to Yosemite Falls. Trees to be removed are north of the river. No riparian species are to be removed. Although this meadow has numerous examples of historic photographs from the 19th century, the year of 1928 is a conservative date that can establish the Southside Drive and turnouts in its present location as an intended vista point. Trees established before 1928 should not be removed.

Figure H-15: Sentinel Meadow. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 6. This site rated a high priority with an average VRA score of 13.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<50" dbh	TOTAL
Ponderosa	40	3	4	47
Cedar	5	6	-	11
Fir	-	7	-	7
			Total	**65**

RES-2-080
Yosemite Valley Chapel
(10.5-High)
Location: Southside Drive
View: Yosemite Falls

The Yosemite Valley Chapel is located on Southside Drive 2.5 Miles east of the El Capitan Crossover. The Chapel is the oldest building in the Valley. It was moved to its present location in 1901, but was originally built in 1879. There are some trees to remove in the immediate foreground, but most of the trees are taller conifers about 300 m away, across the meadow, that obscure the lower fall. Trees established before 1901 should not be removed.

Figure H-16: Chapel. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 20. This site rated a high priority with an average VRA score of 10.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<50" dbh	TOTAL
Ponderosa	5	1	1	7
Cedar	2	5	1	8
			Total	**15**

RES-2-107
Old Hutchings View
(8.75-Medium)
Location: Southside Drive
View: Yosemite Falls, Merced River


Figure H-17: Old Hutchings View. NPS 2009

Old Hutchings View is located adjacent to the southwest corner of Sentinel Bridge. This vista looks across the Merced River to Yosemite Falls. This is the view that originated from the Hutchings House (also called the Upper Hotel) that was across Southside Drive. The original hotel began in 1859, and was added onto during the tenure of James Hutchings. The current Sentinel Bridge was built in 1994, a replacement to a series of bridges that have been in this general location. A conservative date for the current location of the vista is 1928 with the layout of Southside Drive. Trees established before this time should not be removed. There are numerous conifer saplings that will also be removed during initial management of the site.

The site was inventoried as part of the Scenic Vista Management Plan as site number 157. This site rated a medium priority with an average VRA score of 8.75 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<20" dbh	<40" dbh	TOTAL
Ponderosa	17	-	17
Cedar	-	1	1
		Total	**18**

RES-2-116
Sentinel Bridge
(13.5-High)
Location: Sentinel Drive
View: Half Dome, Merced River


Figure H-18: Sentinel Bridge. NPS 2009

The Sentinel Bridge is located at the intersection of Southside drive and Sentinel Drive. The bridge gives visitors views of Half Dome over the Merced River, and filtered views of the Upper Yosemite Falls to the west. The view of Half Dome in the reflected light of sunset over the river has been noted as being particularly dramatic. The current bridge was constructed in 1994, although this is likely the area of the first bridge over the Merced River in the Valley beginning in the 1860s. The state of California replaced James Hutching's timber bridge (that had replaced a previous bridge) with a steel bridge in 1878. This bridge was then replaced with a concrete span in 1919, and expanded in 1960. A conservative, definitive year to reference in the management of the vista is 1878, with the first steel bridge. Therefore any tree established before 1878 should not be removed.

Because of the vista's close ties to the river, it should be noted that no deciduous riparian species, or trees overhanging the river will be removed. There are numerous conifer saplings that should also be removed during the initial management of the vista.

The site was inventoried as part of the Scenic Vista Management Plan as site number 28. This site rated a high priority with an average VRA score of 13.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	11	23	5	8	47
Cedar	12	1	-	-	-	13
					Total	**60**

RES-2-117
Sentinel Bridge Parking
(11.5-High)
Location: Sentinel Drive
View: Yosemite Falls


Figure H-19: Sentinel Bridge Parking. NPS 2009

The Sentinel Bridge Parking area is located on the northern side of the Merced River adjacent to Sentinel Bridge on Sentinel Drive.

The current Sentinel Bridge Drive was constructed in 1956, bypassing the previous road from the previous bridge, across Cook's Meadow, to the falls. The vista dates to the time of the construction of the bridges in this location, and should be considered from the period of 1878. The current parking area, bus stop and walkways provide excellent opportunity to view Cook's Meadow and Yosemite Falls. The main vista from this location is yosemite falls across Cook's meadow. The view of the meadow is as important as the view of the waterfall, and as a result the trees recommended for removal are conifers encroaching on the meadow.

The site was inventoried as part of the Scenic Vista Management Plan as site number 12. This site rated a high priority with an average VRA score of 11.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	6	10	20	13	12	61
Cedar	-	-	10	1	-	11
					Total	**72**

RES-2-097
Housekeeping Bridge
(8-Medium)
Location: Housekeeping Camp
View: Yosemite Falls, Merced River

The Housekeeping Bridge over the Merced River is adjacent to the Housekeeping Camp, located a half mile east of Sentinel Bridge. This bridge was constructed in 1929 and is a contributing structure to the Yosemite Valley Historic District. The primary vista is of Yosemite Falls, over the Merced River, There are a limited number of ponderosa pines in the middle ground, approximately 500 meters downstream that could grow taller and block the view in the future. It is recommended to monitor and manage this vista and remove the trees if necessary in the future. No trees established before 1929 should be removed.

Figure H-20: Housekeeping Bridge. NPS 2009

This vista is similar to the nearby vista inventoried at Housekeeping Beach. It is recommended to manage the bridge vista, and not the beach vista, because management actions would be identical.

The site was inventoried as part of the Scenic Vista Management Plan as site number 92. This site rated a medium priority with an average VRA score of 8 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<40" dbh	<50" dbh	TOTAL
Ponderosa	6	1	7
		Total	**7**

RES-2-084

Curry Amphitheater

(9.5-Medium)

Location: Curry Village
View: Half Dome

The Curry Amphitheater is located within Curry Village.

The current structure was built in 1953, although an amphitheater has been in this location since 1915. Views of Half Dome from within Curry Village are contributing vistas in the Yosemite Valley Historic District and the amphitheater is the most public area with a view that can be reestablished with the removal of a small number of trees. Trees established before 1915 should not be removed.

Figure H-23: Curry Amphitheater. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 46. This site rated a medium priority with an average VRA score of 9.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<20" dbh	<40" dbh	TOTAL
Ponderosa	-	2	2
Fir	1	-	1
Cedar	-	1	1
		Total	**4**

RES-2-086
Curry Village Parking
(9.75-Medium)
Curry Village
View: Half Dome

The Curry Village Parking area is located adjacent to Curry Village. The parking lot was constructed in 1929 and was originally used as an ice skating rink during the winter months. There are a number of conifers at the east end of the lot that could block the view of Half Dome in the future, removal should be considered at that time. Trees established before 1929 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 27. This site rated a medium priority with an average VRA score of 9.75 out of 18.


Figure H-24: Curry Village Parking. NPS 2012

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<20" dbh	<40" dbh	TOTAL
Ponderosa	-	24	24
Cedar	6	-	6
		Total	**30**

RES-2-122
Stoneman Bridge
(12-High)
Northside Drive
View: North Dome, Merced River, Royal Arches

The Stoneman Bridge is on Northside Drive north of Curry Village. Stoneman Bridge was constructed in 1932 Trees established before 1932 should not be removed.

The Stoneman Bridge site should be monitored and maintained, At this time, trees which are partially obscuring the vista are overhanging the river and providing shade to river habitat. It is unlikely that trees further


Figure H-25: Stoneman Bridge. NPS 2012

away would grow tall enough to cover the view of North Dome. The bridge is considered for removal. If the bridge is removed, the vista should not be maintained in the future.

The site was inventoried as part of the Scenic Vista Management Plan as site number 25. This site rated a high priority with an average VRA score of 12 out of 18.

RES-2-123
Stoneman Meadow Boardwalk
(13.5-High)
Location: Happy Isle Loop Road
View: North Dome, Royal Arches, Washingtons Column, Stoneman Meadow

The Stoneman Meadow boardwalk is located at the intersection of Happy Isles Loop Road and Curry Village Road. The boardwalk gives visitors a panoramic view of the meadow and many other significant Yosemite landmarks such as Glacier Point, North Dome, Royal Arches, and Washington's Column. Half Dome can be seen in the distance to the east and Yosemite Falls can be seen in the distance to the west. The primary vista to manage at this site is the view to North Dome, Royal Arches and Washington's Column where conifers have encroached onto the edge of the meadow. The Happy Isles Loop was constructed in 1929 and trees established before 1929 should not be removed.

Figure H-26: Stoneman Meadow. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 6. This site rated a high priority with an average VRA score of 13.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	19	16	46	13	94
Cedar	36	12	15	3	66
				Total	**160**

RES-2-082
Clarks Bridge
(8-Medium)
Location: Happy Isle Loop Road
View: Yosemite Falls

Clarks Bridge is west of the Concessioner Stables on Happy Isles Loop Road. It is a distant vista of Yosemite Falls down the Merced River. Large trees in the middle ground up to 600 meters away are recommended for removal. Clarks Bridge was constructed in 1928, so trees established before 1928 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 7. This site rated a medium priority with an average VRA score of 8 out of 18.


Figure H-27: Clark's Bridge. NPS 2012

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	6	14	17	2	39
Cedar	11	5	1	4	-	21
					Total	**60**

RES-2-094
Happy Isles Bridge
(8.5-Medium)
Location: Happy Isles Loop Road
View: North Dome, Merced River

The Happy Isles Bridge is at the southeast point of Happy Isles Loop Road. Happy Isles Bridge was constructed in 1929, so trees established before 1929 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 14. This site rated a medium priority with an average VRA score of 8.5 out of 18.


Figure H-28: Happy Isles Bridge. NPS 2012

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	-	-	-	1	1
Cedar	8	2	-	-	10
Fir	11	2	1	3	17
				Total	**28**

RES-2-100

Illilouette View

(8.25-Medium)

Location: Mist Trail
View: Illilouette Falls

Illilouette View is located on the Mist Trail between the trailhead at Happy Isles and the Vernal Falls Bridge. The trail on the south side of the river was built in 1885 by George Anderson, and reworked by the Park Service in 1928.

The vista is from a viewing area to Illilouette Falls. The view is almost completely blocked. The trees recommended for removal are on the opposite bank of the river. No trees should be removed that overhang the river, or established before 1928. No actions in wilderness areas will occur.

Figure H-29: Illilouette View. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 30. This site rated a medium priority with an average VRA score of 8.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Cedar	-	-	1	-	1	2
Fir	4	6	9	4	-	23
					Total	**25**

RES-2-130
Vernal Fall Foot Bridge
(7.25-Medium)
Location: Mist Trail
View: Vernal Falls

The Vernal Fall Foot Bridge is located on the mist trail approximately 0.75 miles from the Mist Trail trailhead. There has been a bridge near the base of the fall since one was constructed by the state of California in 1885. At present, there are conifers encroaching from the north, but these are within the Wilderness boundary, which is about 25 meters upstream from the bridge. No trees larger than 6" dbh are recommended for removal. This site should be monitored and maintained. There are small maple trees, outside of Wilderness, near the bridge that could be trimmed in the future to preserve a view to the fall.


Figure H-30: Vernal Fall Foot Bridge. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 29. This site rated a medium priority with an average VRA score of 7.25 out of 18.

RES-2-069
Ahwahnee Lounge
(11.25-High)
Location: Ahwahnee Hotel, Royal Arches, North Dome, Washington's Column
View: Half Dome

The Ahwahnee Dining Lounge is located within the historic Ahwahnee Hotel, a National Historic Landmark. The Ahwahnee Hotel was constructed in 1927 and the Lounge was sited to be a viewing lounge to the scenic wonders of Yosemite. Many areas of the hotel were aligned to take full and dramatic effect of the scenery. One of the dramatic views that have been obscured by conifers is to Half Dome from the Lounge. Trees in the middle ground up to 250 meters from the building are recommended for removal. Trees established before 1927 should not be removed for vista management.

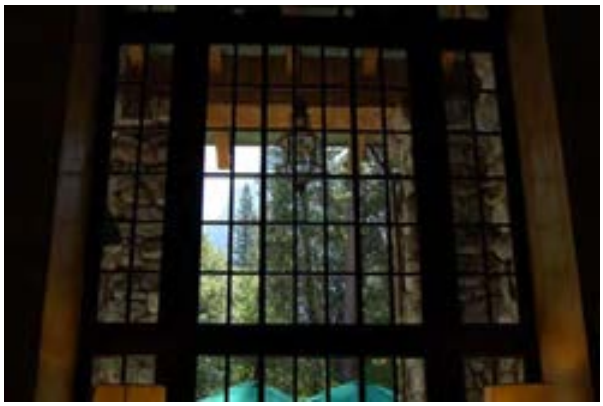


Figure H-33: Ahwahnee Lounge. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 159. This site rated a high priority with an average VRA score of 11.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	<60" dbh	TOTAL
Ponderosa	26	6	27	39	5	2	94
Cedar	45	66	10	-	1	-	122
						Total	**216**

RES-2-073
Ahwahnee Winter Club Room
(9.5-Medium)
Location: Ahwahnee Hotel
View: Royal Arches, North Dome, Washington's Column, Half Dome

This vista is next to the Great Lounge, and falls within the same viewing corridor. This site should be monitored, and action should not be taken to block this view. No additional action should be taken at this location outside of managing the Ahwahnee Lounge vista.

The site was inventoried as part of the Scenic Vista Management Plan as site number 228. This site rated a medium priority with an average VRA score of 9.5 out of 18.

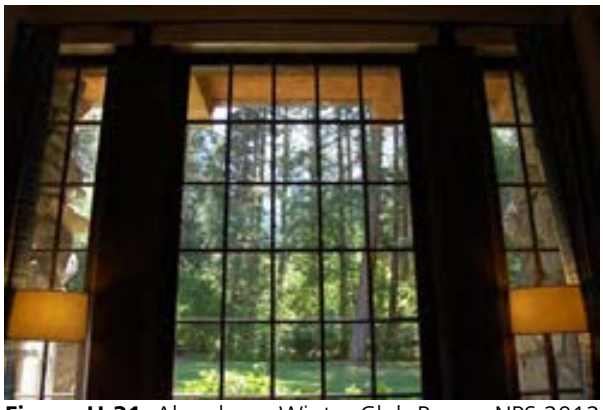


Figure H-31: Ahwahnee Winter Club Room. NPS 2012

RES-2-068
Ahwahnee Dining Room
(10.25-High)
Location: Ahwahnee Hotel
View: Yosemite Falls

The Ahwahnee Dining Room is within the historic Ahwahnee Hotel, a National Landmark. The large window at the end of the grand hall looks west to Yosemite Falls. It was intended to frame the dramatic view for the guests while dining.

The Ahwahnee Hotel was constructed in 1927, so trees established before this time should not be removed. This is the only vista which recommends removing California Black Oak. These trees are obscuring a view in which there is little opportunity for a viewer to move


Figure H-32: Ahwahnee Dining Room. NPS 2009

around. Trimming rather than removing would improve the current vista, but would likely need to be trimmed on an annual basis. Trees in the middle ground up to 500 meters from the window are recommended for removal.

The site was inventoried as part of the Scenic Vista Management Plan as site number 161. This site rated a high priority with an average VRA score of 10.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	56	26	48	23	3	156
Cedar	7	15	15	7	1	45
Black Oak	1	-	1	-	-	2
Live Oak	4	-	-	-	-	4
					Total	**207**

RES-2-072
Ahwahnee Solarium
(8.75-Medium)
Ahwahnee Hotel
View: Glacier Point

The Ahwahnee Solarium is at located at the south end of the Ahwahnee Hotel. The Ahwahnee Hotel was constructed in 1927, so no tree established before 1927 should be removed. Trees in the middle ground up to 300 meters from the building are recommended for removal.

The site was inventoried as part of the Scenic Vista Management Plan as site number 160. This site rated a medium priority with an average VRA score of 8.75 out of 18.

Figure H-34: Ahwahnee Solarium. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	<60" dbh	TOTAL
Ponderosa	18	13	10	27	10	-	78
Cedar	14	29	5	4	1	1	54
						Total	**132**

RES-2-157

Ahwahnee Hotel, front lawn

(10.25-High)

Location: Ahwahnee Hotel
View: Yosemite Falls, Glacier Point

The Ahwahnee Hotel Front Lawn is located at the southern end of the hotel. The vista is from the interpretive sign, looking toward Yosemite Falls.

The Ahwahnee Hotel was constructed in 1927, so no tree established before this time should be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 16. This site rated a high priority with an average VRA score of 10.25 out of 18.

Figure H-35: Ahwahnee Hotel Front Lawn. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	8	1	1	3	1	14
Cedar	-	1	-	1	-	2
Alder	-	trim	-	1	-	1
					Total	**17**

RES-2-071

Ahwahnee Meadow

Peeling Domes Sign

(11.5-High)

Location: Northside Drive
View: North Dome, Royal Arches, Washington's Column, Half Dome

The Ahwahnee Meadow is located on Northside Drive 0.5 miles from the intersection of Southside Drive. Northside Drive in its current configuration was constructed in 1928, so no trees established before this time should be removed. Removing this segment of Northside Drive is considered under the Merced River Plan. If the segment is removed, and no planned walkway replaces it in this area, the vista should not be monitored or maintained.

Figure H-37: Ahwahnee Meadow. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 227 This site rated a high priority with an average VRA score of 11.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<50" dbh	TOTAL
Ponderosa	4	4
	Total	**4**

RES-2-081

Church Bowl Picnic Area

(12-High)

Location: Ahwahnee Drive
View: Half Dome

The Church Bowl Picnic Area is located on Ahwahnee Drive 0.37 miles west of the Ahwahnee Hotel. A coach road along the north side of the valley was constructed in 1872, although the alignment of the current road is known with certainty to date from 1927. Trees established before this time should not be removed.

Figure H-38: Church Bowl Picnic Area. NPS 2012

The rockfall hazard zone has recently been updated to include an area further away from the cliff face. As stated in the SVMP, large trees help buffer the impact, and potential damage, of rockfall by absorbing some of the force and rock debris. Most of the trees currently obscuring the view are outside of the rock fall zone, on the south side of the road and not effective in protecting any structure. No trees on the north side of the road within the rockfall hazard zone will be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 11. This site rated a high priority with an average VRA score of 12 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	<60" dbh	TOTAL
Ponderosa	80	6	12	6	6	4	114
Cedar	95	35	13	17	10	1	171
						Total	**285**

RES-2-131
Visitor Center Benches
(9.75-Medium)
Location: Ahwahnee Drive
View: Yosemite Falls

The Visitor Center Benches are in the plaza near the front entrance of the Yosemite Valley Visitors Center. The village was established with the construction of the Administration Building and the Museum, completed in 1926. Trees established before this time will not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 39. This site rated a medium priority with an average VRA score of 9.75 out of 18.

Figure H-39: Visitor Center Benches. NPS 2012

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<30" dbh	TOTAL
Fir	3	3
	Total	**3**

RES-2-099
Hutchings View B
(12-High)
View: Yosemite Falls
Location: Northside Drive

Hutchings View B is near the Yosemite Falls Shuttle Stop at the Hutchings interpretive sign. Trees were cleared from this vista in 2004 to open a viewing corridor for the upper and lower falls, along an axis to where the Old Hutchings View is located. Signs interpreting Hutchings contributions were created and placed near Northside Drive. The intention of this vista is to recall the vista as it appeared to Hutchings in 1859, but a conservative year adopted at the Old Hutchings View is 1928, when the layout of the adjacent roads was finalized. Yosemite Creek is adjacent to the vista point so riparian species should not be removed.

Figure H-40: Hutchings View B. NPS 2012

The site was inventoried as part of the Scenic Vista Management Plan as site number 158. This site rated a high priority with an average VRA score of 12 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	6	11	1	1	19
Cedar	30	5	6	2	1	44
Black Oak			Trim 4			
					Total	**63**

RES-2-141
Yosemite Falls View
(8.75-Medium)
Location: Northside Drive
View: Yosemite Falls

Yosemite Falls View is northeast of The Yosemite Lodge. Trees were cleared as part of the Yosemite Falls approach project in 2005. The intention in managing this vista is to broaden the view to minimize future maintenance needs of trimming, and lessening the alley-like appearance of the trees on the approach to the falls. A conservative year to manage the vista from is 1928, when the circulation of the valley was generally set.


Figure H-41: Yosemite Falls View. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 18. This site rated a medium priority with an average VRA score of 8.75 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	1	8	11	2	22
Cedar	55	4	1	4	-	64
Fir	-	2	3	2	-	7
					Total	**93**

RES-2-104
Lower Falls Bridge
(10-High)
Location: Lower Yosemite Falls Trail
View: Yosemite Falls

The Lower Falls Bridge is near the base of the Yosemite Falls at the Lower Yosemite Falls Overlook. The vista is predominately open, but there are several cedars that could restrict the view in the future. These trees should be removed if they limit the view from the bridge. The bridge was built in 1920 and is a contributing structure to the Yosemite Valley Historic District. Trees established prior to 1920 should not be removed.


Figure H-42: Lower Falls Bridge. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 48. This site rated a high priority with an average VRA score of 10 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	TOTAL
Cedar	4	2	6
		Total	**6**

RES-2-083
Cook's Meadow, South Boardwalk
(8-Medium)
Location: Sentinel Drive
View: Yosemite Falls

The Cook's Meadow Boardwalk is located in the southwest corner of Cooks Meadow. This vista should be monitored and maintained, but no management actions removing trees larger than 6" dbh are recommended.


Figure H-43: Cooks Meadow. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 2. This site rated a medium priority with an average VRA score of 8 out of 18.

RES-2-125
Superintendents Bridge, flood sign
(10.75-High)

View: North Dome, Royal Arches, Half Dome, Merced River

The Superintendents Bridge is a footbridge south of the Old Superintendents House. The view to Half Dome is blocked by conifers. No riparian species should be removed in management of this vista.

The site was inventoried as part of the Scenic Vista Management Plan as site number 47. This site rated a high priority with an average VRA score of 10.75 out of 18.

Figure H-44: Superintendents Bridge. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	-	3	13	1	17
Cedar	60	20	6	1	87
				Total	**104**

RES-2-142
Yosemite Lodge Portico
(9.5-Medium)

Location: Northside Drive
View: Yosemite Falls

The Yosemite Lodge Portico is in front of the Registration Building at Yosemite Lodge. The Registration building was completed in 1959. Trees that were established prior to 1959 should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 19. This site rated a medium priority with an average VRA score of 9.5 out of 18.

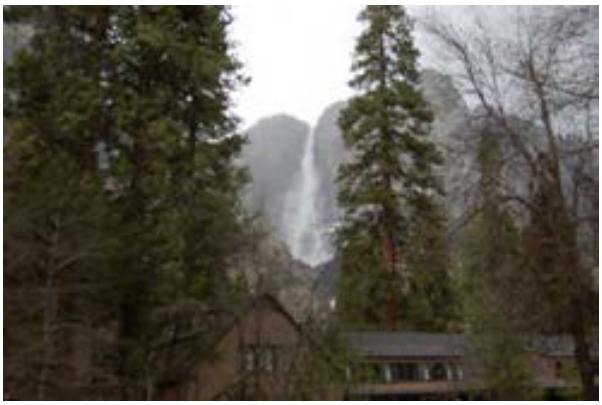


Figure H-45: Yosemite Lodge Portico. NPS 2009

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<40" dbh	TOTAL
Ponderosa	5	5
Cedar	6	6
	Total	**11**

RES-2-102
Leidig Meadow, west
(11.75-High)
Location: Valley Loop Trail
View: North Dome, Washington's Column, Cathedral Arches, Half Dome, Sentinel Rock


Figure H-46: Leidig Meadow, west end. NPS 2009

The vista is on a trail that about 50 meters south of the Valley Loop trail at the west end of Leidig Meadow, about 1 mile west of the Yosemite Lodge. It is a remarkable point in which a visitor can see many of the Yosemite Valley's incredible geologic formations from one location, across a large meadow. The intention is to remove conifers encroaching in the meadow. It is difficult to assign a date to this location. Leidig Meadow has a long history of use including serving as the location for a US Army camp when the headquarters were moved to the Valley in 1906. The meadow was fenced for grazing shortly after, and at one point was the location of a horse race track. A conservative year from which the vista can be managed is 1928, when the circulation pattern in the valley was generally set.

The site was inventoried as part of the Scenic Vista Management Plan as site number 31. This site rated a high priority with an average VRA score of 11.75 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	4	5	4	6	19
				Total	**19**

RES-2-139
Wosky Pond
(12.25-High)
Location: Northside Drive
View: Wosky Pond, Cathedral Rock, Cathedral Spires, Slaughterhouse Meadow

Wosky Pond is about 2 miles west of the Yosemite Lodge on Northside Drive. The view of Cathedral Rock from Northside Drive is listed as a contributing vista in the Yosemite Valley Historical District. This is one of the few areas along Northside Drive that has a vista which is generally unobstructed. The intent of managing this vista is to remove the conifers which are encroaching on the meadow. There are trees to the south of the Meadow could obscure the Spires in the future. The circulation in the Valley was generally set in 1928 and therefore no trees established before this time should be removed.


Figure H-47: Wosky Pond. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 42. This site rated a high priority with an average VRA score of 12.25 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	22	19	29	11	81
				Total	**81**

RES-2-087
Devil's Elbow
(9-Medium)
Location: Southside Drive
View: El Capitan

Devil's Elbow is located 2.25 miles west of the Yosemite Lodge on Northside Drive. El Capitan looms over this area. It is unlikely trees will block the view from the trail just south of Northside Drive. No trees over 6" dbh should be removed at this time. This site should be monitored and maintained.

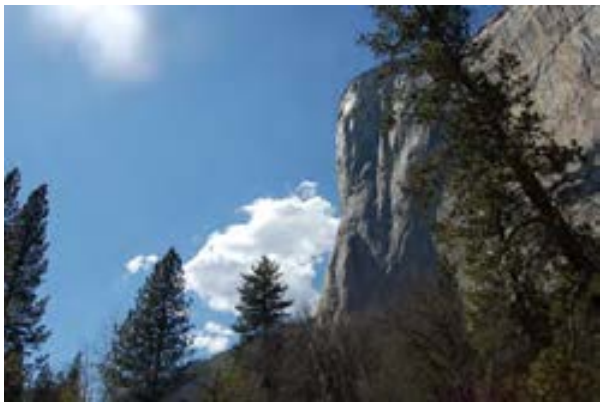


Figure H-48: Devil's Elbow. NPS 2009

The site was inventoried as part of the Scenic Vista Management Plan as site number 41. This site rated a medium priority with an average VRA score of 9 out of 18.

RES-2-088
El Capitan Meadow
(14.5-High)
Location: Southside Drive
View: El Capitan

Figure H-49: El Capitan Meadow, east end. NPS 2009

The El Capitan Meadow vista is in the northeastern portion of El Capitan Meadow. The vista includes a large portion of the Yosemite Valley with iconic natural landmarks such as El Capitan, The Three Brothers, Cathedral Rocks, and the Cathedral Spires. The viewpoint is part of the Yosemite Road Guide (marker V8). Views from Northside Drive to El Capitan are also listed as a contributing vista to the Yosemite Valley Historical District. The Meadow is a popular location for visitors to watch climbers ascending the Yosemite Valley walls. The Merced River Plan proposes constructing a boardwalk into the meadow. If a boardwalk is built, the vista should be managed from that location. No trees should be removed from within the rockfall hazard zone.

Northside Drive in its current configuration was established by 1928; therefore trees established prior to this date should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 33. This site rated a high priority with an average VRA score of 14.5 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	TOTAL
Ponderosa	38	29	50	35	152
Cedar	38	38	18	-	94
Fir	-	-	1	-	1
				Total	**247**

RES-2-076
Hanging Valley, Bridalveil Fall
(14-High)
Location: Northside Drive
View: Bridalveil Falls, Merced River

The Hanging Valley Viewpoint is on Northside Drive, approximately one mile west of El Capitan Crossover. The viewpoint gives visitors views across the Merced River to well-known Yosemite landmarks including Bridalveil Falls and the Leaning Tower. The viewpoint is part of the Yosemite Road Guide (marker V10) and is a contributing vista to the Yosemite Valley Historic District. The vista looks over a stand of California Black Oaks. The intention of managing this vista is to remove conifers encroaching into the oaks. Several trees will also be removed from the upper bank on the north side of the Merced River.

Figure H-50: Hanging Valley, Bridalveil Fall. NPS 2009

The current configuration of Northside Drive is in place by 1928, therefore trees established before this time should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 34. This site rated a high priority with an average VRA score of 14 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	TOTAL
Cedar	4	4	1	9
Ponderosa	4	5	5	14
			Total	**23**

RES-2-128
Valley View
(16-High)
Location: Northside Drive
View: Yosemite Valley


Figure H-51: Valley View. NPS 2009

Valley View is at the west end of Northside Drive. This is the vista on the 2010 quarter from the US Mint's "America the Beautiful" series. The viewpoint is part of the Yosemite Road Guide (marker V11) which describes it as being a view of the "gates" of Yosemite with El Capitan on the left and Cathedral Rocks on the right. The landscape of the surrounding Yosemite Valley is reflected in the calm water of the Merced River. The primary objective in managing the vista is to open the mostly obscured view of Bridalveil Fall, and to reduce the number of conifers encroaching on the meadow. There are a large number of dead trees from a controlled burn in 2007. The area from which trees will be removed is approximately 4 acres. There are 117 snags within this area, and of these, those less than 12" dbh will be removed and larger snags of greater habitat value will remain.

Northside Drive in its current configuration was in place by 1928. Therefore trees established before this time should not be removed.

The site was inventoried as part of the Scenic Vista Management Plan as site number 146. This site rated a high priority with an average VRA score of 16 out of 18.

MAXIMUM NUMBER OF TREES OVER 6"DBH REMOVED AT THIS LOCATION

Tree Species	<12" dbh	<20" dbh	<30" dbh	<40" dbh	<50" dbh	TOTAL
Ponderosa	12	66	36	47	14	175
Cedar	102	98	73	48	6	327
Fir	-	5	9	3	-	17
					Total	**519**

SNAGS TO REMOVE

Tree Species	<12" dbh	TOTAL
Ponderosa	3	3
Cedar	102	102
	Total	**105**

SNAGS TO REMAIN

Tree Species	<20" dbh	<30" dbh	TOTAL
Ponderosa	3	2	5
Cedar	7	-	7
		Total	**12**

TABLE H-1: SITES INVENTORIED, BUT NO MANAGEMENT OR MAINTENANCE ACTIONS RECOMMENDED

Code	SVMP Inventory	VRA score	Priority	Name	Notes
--	1	12.25	HIGH	Residence One	relocated - MRP common to all
RES-2-070	10	10.5	HIGH	Ahwahnee Meadow, Northside Drive	do not manage - similar to 227
--	17	12	HIGH	Hutchings View A	do not manage – similar to 158
--	36	10.25	HIGH	Valley View, old Big Oak Flat	do not manage – near wilderness
RES-2-079	40	10.25	High	Cathedral Beach	do not manage – similar to 226
RES-2-085	224	9.75	MEDIUM	Curry Village Ice Skating Rink	do not manage – not in historic location, proposed removal in MRP
RES-2-096	26	9.75	MEDIUM	Housekeeping Beach	do not manage - similar to 92
RES-2-110	169	9.75	MEDIUM	Old Wawona Road (point 3)	do not manage - near wilderness
RES-2-112	164	9.75	MEDIUM	Old Wawona Road (point 5)	do not manage – near wilderness
RES-2-077	43	9.5	MEDIUM	Bridalveil Meadow	Do not manage – duplicate
RES-2-113	162	9.25	MEDIUM	Old Wawona Road (point 6)	do not manage – near wilderness
RES-2-111	165	9	MEDIUM	Old Wawona Road (point 4)	do not manage – near wilderness
--	170	8.75	MEDIUM	Old Wawona Road (point 2)	do not manage – near wilderness
RES-2-108	171	8.75	MEDIUM	Old Wawona Road (point 1)	do not manage – near wilderness
RES-2-114	163	7.75	MEDIUM	Old Wawona Road (point 7)	do not manage – near wilderness
RES-2-090	21	8.5	MEDIUM	El Capitan postage stamp beach	do not manage - similar to 3
RES-2-140	230	0	LOW	Yosemite Falls Trail	do not manage - erroneous point
RES-2-089	91	0	LOW	El Cap Meadow, east end	do not manage - duplicate
RES-2-103	234	0	LOW	Leidig Meadow, west end	do not manage - duplicate
RES-2-133	57	7	LOW	Wawona Hotel	do not manage – low priority score
RES-2-105	178	7	LOW	Nevada Fall Bridge	do not manage – low priority score
RES-2-129	180	7	LOW	Vernal Fall	do not manage – low priority score
--	8	7	LOW	Lamon Orchard	do not manage – low priority score

TABLE H-1: SITES INVENTORIED, BUT NO MANAGEMENT OR MAINTENANCE ACTIONS RECOMMENDED (CONTINUED)

Code	SVMP Inventory	VRA score	Priority	Name	Notes
RES-2-124	90	7	LOW	Sugar Pine Bridge	do not manage – low priority score
RES-2-067	89	6.75	LOW	Ahwahnee Bridge	do not manage – low priority score
RES-2-074	4	6.5	LOW	Black Spring	do not manage – low priority score
RES-2-105	179	6.5	LOW	Nevada Fall	do not manage – low priority score
RES-2-101	181	6.25	LOW	Lady Franklin Rock	do not manage – low priority score
--	13	5.5	LOW	Happy Isles, interpretive sign	do not manage – low priority score
RES-2-132	56	5.25	LOW	Wawona golf course, south end	do not manage – low priority score
RES-2-066	59	5	LOW	Texas Turnout	do not manage – low priority score
RES-2-138	60	4.25	LOW	Panetta's turnout	do not manage – low priority score
RES-2-136	61	4.25	LOW	Mosquito Creek helispot	do not manage – low priority score
RES-2-137	62	4.25	LOW	North of Mosquito helispot	do not manage – low priority score
RES-2-134	63	4.25	LOW	Chain control point, north of Wawona	do not manage – low priority score
RES-2-135	58	3.5	LOW	Turnout north of Chilnualna Falls Road	do not manage – low priority score

APPENDIX I

YOSEMITE VALLEY HISTORIC DISTRICT RESOURCES

APPENDIX I

YOSEMITE VALLEY HISTORIC DISTRICT RESOURCES

The natural features particularly important to the overall significance and integrity of the historic district.

- Upper Yosemite Fall
- Lower Yosemite Fall
- Bridalveil Fall
- Nevada Fall
- Vernal Fall
- El Capitan
- Cathedral Range
- Three Brothers
- Sentinel Rock
- Yosemite Point
- Lost Arrow
- Royal Arches
- Glacier Point
- Washington Column
- Half Dome
- North Dome

Contributing buildings (28) in the Yosemite Valley historic district (valley-wide) are listed below.

B1 Yosemite Valley Chapel, built 1879, moved 1901 (Listed in NR, 1973)
B2 Le Conte Memorial Lodge, 1903, moved 1919 (Listed in NR 1977; NHL, 1987)
B3 Concessioner Stables Office, 1927
B4 Concessioner Horse Stable, 1927
B5 Concessioner Mule Barn, 1926
B6 Concessioner Stables Linen Building, 1927An asterisk () next to the building number indicates previously listed resources.
B7 Concessioner Stables Tack Building, 1927
B8 Concessioner Stables Harness Shop, 1927
B9 Concessioner Stables Blacksmith Shop, 1927
B10 Concessioner Stables Comfort Station, 1927
B11 Concessioner Stables Pony Tack Shed #1, 1926
B12 Concessioner Stables Pony Tack Shed #2, 1926
B13 Concessioner Stables Employee Residence, 1927
B14-B18 5 Concessioner Stables Employee Cabins, 1927
B19 Vernal Fall Comfort Station, 1934
B20-B27 8 Comfort Stations in Upper and Lower River campgrounds (Camps 15, 7),1922- 1924
B28 Nature Center at Happy Isles (Fish hatchery, 1927)

Contributing structures (39) in the valley-wide area are listed below.

S1 Pohono Bridge, 1928; Listed in NR 1977
S2 Gauging Station at Pohono Bridge, 1916
S3 Valley Loop Trail, 1920s
S4 Bridalveil Fall Access Road
S5 Bridalveil Fall Trail

S6-S8 3 Bridalveil Fall Trail Bridges No.1-3, 1913
S9 El Capitan Bridge, 1933
S10 El Capitan Transverse Road
S11 Northside Drive, 1880s
S12 Southside Drive, 1880s
S13 Superintendent's Footbridge, 1937
S14 Yosemite Creek Bridge, 1922; Listed in NR in 1977
S15 Lower Yosemite Fall Trail
S16-21 6 Yosemite Fall Trail Bridges
S22 Housekeeping Footbridge, 1929
S23 Sentinel Bridge Transverse Road
S24 Stoneman Bridge 1932; Listed in NR 1977
S25 Ahwahnee Bridge 1928; Listed in NR 1977
S26 Sugar Pine Bridge 1928; Listed in NR 1977
S27 Clark's Bridge, 1928; Listed in NR 1977
S28 Eastern Portion of Loop Drive
S29 Mirror Lake Road
S30 Tenaya Creek Bridge, 1928; Listed in NR in 1977
S31 New Happy Isles Bridge, 1929; Listed in NR in 1977
S32 Happy Isles Middle Bridge, 1997 reconstruction
S33 Happy Isles West Bridge, 1997 reconstruction
S34 Mist Trail, 1858
S35 Four Mile Trail, 1872/1928
S36 Concessioner Stables Corral, 1927
S37 Concessioner Stables Feeders, 1927
S38 Concessioner Stables Fence, 1927
B39 Yosemite Fall Trail, 1888

Contributing sites (13) in the Yosemite Valley historic district are listed below.

Site 1 Bridalveil Meadow
Site 2 El Captain Meadow
Site 3 Slaughterhouse Meadow
Site 4 Sentinel Meadow
Site 5 Leidig Meadow
Site 6 Cook's Meadow
Site 7 Ahwahnee Meadow
Site 8 Stoneman Meadow
Site 9 Hutchings Orchard
Site 10 Lamon Orchard and Meadow (Listed in the NR in 1975)
Site 11 Fern Springs
Site 12 Mirror Lake
Site 13 Camp 4 (Sunnyside Campground; Listed in 2003)

Contributing buildings (138) in the Yosemite Village developed area are listed below.

B1 Superintendent's House (1911/1929; Residence No. 1;Listed in NR in 1978)
B2 Superintendent's Garage
B3 Yosemite Village Residence 2, 1911, moved to Yosemite Village in 1929
B4 Yosemite Village Residence 3, 1937
B5 Yosemite Village Residence 4, 1911, moved to Yosemite Village in 1929
B6 Yosemite Village Residence 5, 1912, moved to Yosemite Village in 1929
B7 Yosemite Village Residence 6, 1920
B8 Yosemite Village Residence 7, 1920/1939
B9 Yosemite Village Residence 8, 1920/1939
B10 Yosemite Village Residence 9, 1922
B11 Yosemite Village Residence 10, 1922
B12 Yosemite Village Residence 11, 1924
B13 Yosemite Village Residence 12, 1922
B14 Yosemite Village Residence 13, 1914, moved to Yosemite Village in 1929
B15 Yosemite Village Residence 14, 1924/1938
B16 Yosemite Village Residence 16, 1923, rehabilitated 1926
B17 Yosemite Village Residence 17, 1926
B18 Yosemite Village Residence 18, 1919
B19 Yosemite Village Residence 19, 1919
B20 Yosemite Village Residence 20, 1918
B21 Yosemite Village Residence 21, 1919
B22 Yosemite Village Residence 34, 1930
B23 Yosemite Village Residence 35, 1938
B24 Yosemite Village Residence 36, 1937
B25 Yosemite Village Residence 37, 1938
B26 Yosemite Village Residence 39, 1927
B27 Yosemite Village Residence 40, 1927
B28 Yosemite Village Residence 41, 1937
B29 Yosemite Village Residence 42, 1928
B30 Yosemite Village Residence 43, 1928
B31 Yosemite Village Residence 44, 1929
B32 Yosemite Village Residence 45, 1929
B33 Yosemite Village Apartment Building 46, 1930
B34 Yosemite Village Residence 47, 1931
B35 Yosemite Village Residence 48, 1931
B36 Yosemite Village Girls' Dormitory 54, 1923
B37 Yosemite Village Girls' Dormitory 55, 1923
B38 Yosemite Village Girl's Club, 1923
B39 Yosemite Village Girls' Dormitory 58, 1932
B40 Yosemite Village Girls' Dormitory 59, 1932
B41 Yosemite Village Apartment Building 60, 1934
B42 Yosemite Village Residence 61,1934
B43 Yosemite Village Residence 62, 1934

B44 Yosemite Village Residence 63, 1934
B45 Yosemite Village Residence 66, 1940
B46 Yosemite Village Residence 67, 1940
B47 Yosemite Village School Residence 636, 1928
B48 Yosemite Village Residence 637, 1937
B49 Yosemite Village Garage for Residence 636, 1937
B50 Yosemite Village Garage for Residence 3, 1938
B51 Yosemite Village Garage for Residence 48, 1933
B52 Yosemite Village Garage for Residence 43, 1929
B53 Yosemite Village Garage for Residence 41, 1927
B54 Yosemite Village Garage for Residence 40, 1919
B55 Yosemite Village Garage for Residence 45, 1933
B56 Yosemite Village Garage for Residence 14, 1924
B57 Yosemite Village Garage for Residence 12, 1922
B58 Yosemite Village Garage for Residence 11, 1927
B59 Yosemite Village Garage for Residence 6, 1924
B60 Yosemite Village Woodshed for Residence 21, 1919
B61 Yosemite Village Woodshed for Residence 19, 1919
B62 Yosemite Village Woodshed for Residence 8, 1920
B63 Museum Building, 1926
B64 Administration Building, 1924
B65 Rangers' Club, 1920
B66 Rangers' Club Transformer House, 1920
B67 Rangers' Club Garage, 1920
B68 Best Studio & Ansel Adams Darkroom, ca. 1925
B69 Ansel Adams Residence, ca. 1925
B70 Ansel Adams Duplex Residence, ca. 1925
B71 Pohono Indian Studio, 1925
B72 Yosemite Village US Post Office, 1924
B73 Yosemite Valley Group Utility Building (Fort Yosemite), 1935
B74 Yosemite Valley Utility Area Equipment Shed (HVAC-Siberia Storage), 1932
B75 Yosemite Valley Utility Area Camp 1 Comfort Station, 1924
B76 Yosemite Valley Utility Area Camp 1 Kitchen, ca. 1920
B77 Yosemite Valley Utility Area Camp 1 Cabin #1, 1923
B78 Yosemite Valley Utility Area Camp 1 Cabin #2, 1923
B79 Yosemite Valley Utility Area Warehouse (529 and 532), 1916
B80 Yosemite Valley Utility Area Supply Warehouse (530), 1916
B81 Yosemite Valley Utility Area Equipment Shed (516), 1921
B82 Yosemite Valley Utility Area Equipment Shed (518), 1920
B83 Yosemite Valley Utility Area Equipment Shed (519), 1926
B84 Middle Tecoya Residence 126, 1942
B85 Middle Tecoya Residence 127, 1942
B86 Middle Tecoya Residence 128, 1942
B87 Middle Tecoya Residence 129, 1942
B88 Middle Tecoya Residence 130, 1942

B89 Middle Tecoya Residence 131-132, 1942
B90 Middle Tecoya Residence 133, 1942
B91 Middle Tecoya Residence 134-135, 1942
B92 Middle Tecoya Residence 136, 1942
B93 Middle Tecoya Residence 139, 1942
B94 Middle Tecoya Garage for Residence, ca. 1942
B95 Middle Tecoya Garage for Residence, ca. 1942
B96 Middle Tecoya Garage for Residence, ca. 1942
B97 Lewis Memorial Hospital (Medical Clinic), 1929
B98 Nurses' Quarters and Garage, 1931
B99 Yosemite Village Residence 49, Doctor's Residence, 1931
B100 Yosemite Village Residence 65, 1939
B101 Lower Tecoya Dormitory A & B, 1930s
B102 Lower Tecoya Dormitory C & D, 1920s
B103 Lower Tecoya Dormitory E, 1930s
B104 Lower Tecoya Dormitory F, 1920s or 1930s
B105 Lower Tecoya Dormitory Y, 1920s
B106 Lower Tecoya Residence 119, 1925-1930
B107 Lower Tecoya Residence 118, 1925-1930
B108 Lower Tecoya Residence 117, 1925-1930
B109 Lower Tecoya Residence 116, 1925-1930
B110 Lower Tecoya Residence 115, 1925-1930
B111 Lower Tecoya Residence 114, 1925-1930
B112 Lower Tecoya Residence113, 1920
B113 Lower Tecoya Residence 112, 1922-1924
B114 Lower Tecoya Residence 111, 1920
B115 Lower Tecoya Residence 110, 1922-1924
B116 Lower Tecoya Residence 109, 1922-1924
B117 Lower Tecoya Residence 108, 1922-1924
B118 Lower Tecoya Residence 107, 1920
B119 Lower Tecoya Residence105/106, 1920s
B120 Lower Tecoya Residence103/104, 1920s
B121 Lower Tecoya Residence101/102, 1925-1930
B122 Lower Tecoya Residence 100, ca. 1920s-1930s
B123 Lower Tecoya Residence 99, ca. 1920s-1930s
B124 Lower Tecoya Residence 98, ca. 1920s-1930s
B125 Lower Tecoya Residence 92-97, 1925-1930
B126 Lower Tecoya Residences 86-91, 1925-1930
B127 Lower Tecoya Laundry Cabin, 1930s
B128-B132 Lower Tecoya Garages, 1920s-1930s
B133 Concessioner Headquarters Building, 1937-1939
B134 Curry Garage (Concessioner Garage), 1920
B135-B138 4 Garages north of Curry Garage, 1920s

Fourteen (14) structures contributing to the Yosemite Village developed area are listed below.

S1 Village Drive (between junction with Northside Drive and Village bike path), Listed in NR in 1978
S2 Road between Village Drive and Maintenance Area
S3 Roads and alleys in Yosemite Village Residential Area, Listed in NR in 1978
S4 Middle Tecoya Road
S5 Lower Tecoya Road
S6 Ahwahnee Meadow Road Pedestrian Path
S7-S10 4 Bridges over Indian Canyon Creek
S11 Lower Tecoya Footbridge
S12 Rangers' Club Parking Area
S13 Yosemite Valley Medical Clinic Road and Parking Area
S14 Yosemite Valley Medical Clinic Paths

Contributing sites (1) in the Yosemite Village area are listed below.

Site 1 Yosemite Pioneer Cemetery

Contributing buildings (10) in the Ahwahnee Hotel developed area are listed below.

B1 Ahwahnee Hotel, 1927, Listed in NR 1977, Designated NHL 1987
B2-B9 8 Ahwahnee Hotel Guest Cottages, 1928
B10 Ahwahnee Hotel Guest Cottage Linen Building

Contributing structures (11) in the Ahwahnee Hotel developed area are listed below.

S1 Ahwahnee Hotel Entry Road (from gateway to parking lot)
S2 Ahwahnee Hotel Gate Lodge and Post
S3 Ahwahnee Hotel Parking Area (West)
S4 Ahwahnee Hotel Fish Pond
S5 Ahwahnee Hotel Paths Leading to Guest Cottages
S6 Ahwahnee Hotel Footbridge to Guest Cottages
S7 Ahwahnee Hotel Footbridge near Merced River
S8 Ahwahnee Hotel Bridle Trail Ford
S9 Ahwahnee Hotel Drainageways
S10 Ahwahnee Hotel Tennis Courts
S11 Ahwahnee Hotel Terrace

Contributing buildings (126) in the Camp Curry developed area are listed below.

B1 Camp Curry Registration Office (now Lounge), 1904, Camp Curry Historic District listed in NR in 1979)
B2 Camp Curry Post Office (now Registration Office), 1920
B3 Camp Curry Stoneman House (now Lodge), 1913
B4 Camp Curry Huff House, 1923
B5-B50 46 Camp Curry Cabins Without Baths (WOBs), singles and duplexes, 1928-1935

B51-B56 5 Camp Curry Comfort Stations and 1 Camp Curry Employee Kitchen/Shower Building in tent and cabin areas
B57-B103 47 Camp Curry Duplexes with Baths (Bungalows), 1918-1922
B104 Camp Curry Mother Curry Bungalow, 1917
B105 Camp Curry Foster Curry Cabin, 1916
B106 Camp Curry Stoneman Cabin (Cottage 819), 1923
B107 Camp Curry Cabin 90 A/B (Rufus Green Bungalow), 1920s
B108-B109 2 Camp Curry Comfort Stations in the ice rink area, 1930s
B110 Camp Curry Bike Shop/Skate Rental Building, 1920-1940
B111-126 Camp Curry Employee Cabins (Boys Town Cabins), 1930

Contributing structures (547) in the Camp Curry area are listed below.

S1-S427 427 Camp Curry Canvas Cabins (Guest Cabins) (year 2000 number; number has varied over the years)
S428-S469 42 Camp Curry Employee Canvas Cabins (Terrace Tent Cabins) (year 2000 number)
S470-S542 73 Camp Curry Employee Canvas Cabins (Boys Town Tent Cabins) (year 2000 number)
S543 Camp Curry Pedestrian Paths
S544 Camp Curry Bungalow Roads
S545 Camp Curry Entrance Sign, 1914
S546 Camp Curry Electrical Transformer Structure, 1920
S547 Two-story Storage Structure (in Cabins without Baths area)

Contributing sites (2) in the Camp Curry area are listed below.

Site 1 Walls and foundations of original LeConte Memorial Lodge
Site 2 Curry Orchard Parking Area

APPENDIX J

NHPA ASSESSMENT OF EFFECT FOR SITE-SPECIFIC ACTIONS

APPENDIX J

NHPA COMPLIANCE REPORT

Appendix J is intended to provide a complete record of compliance with Section 106 of the National Historic Preservation Act. This includes how consultation was conducted, properties identified in the area of potential effects, and an assessment of effect on historic properties in more detail than that provided in the EIS. This document includes a list of all historic properties and the determination of effect anticipated under the preferred alternative (Alternative 5). Resolution of adverse effects would be addressed consistent with 36 CFR Part 800.6 and 800.11, and would require continued consultation with SHPO, ACHP and traditionally-associated American Indian tribes and groups.

36 CFR PART 800.3 INITIATION OF THE SECTION 106 PROCESS

Planning for the Merced Wild and Scenic River has been carried out in consultation with state, federal, and local agencies; the public; and tribes and groups associated with the Merced Wild and Scenic River corridor. Consistent with 36 CFR Part 800.3(b) and 36 CFR Part 800.8, the review process for Section 106 of the NHPA is being conducted in coordination with the NEPA review process for the Merced River Plan/DEIS. Public involvement will continue throughout the planning process. Please read Chapter 10 of Volume 2b for further details on consultation and coordination.

Culturally Associated American Indian Tribes and Groups

The NPS is consulting with traditionally associated American Indian tribes and groups throughout the development of the *Merced River Plan/DEIS*. Yosemite National Park currently maintains consultation relationships with seven American Indian tribes and groups that claim traditional cultural association with park lands and resources. This includes five federally recognized American Indian tribes (Bridgeport Paiute Indian Colony of California, Bishop Paiute Tribe, North Fork Rancheria of Mono Indians of California, Picayune Rancheria of the Chukchansi Indians, and the Tuolumne Band of Me-Wuk Indians), and two American Indian groups (American Indian Council of Mariposa County, Inc. [also known as the Southern Sierra Miwuk Nation] and the Mono Lake Kutzadika[a]). Consultation with federally-recognized American Indian tribes takes place on a government-to-government basis.

In December 2009, Yosemite requested tribal participation in the Merced Wild and Scenic River Plan. The NPS formally requested information from culturally associated tribes and groups for the protection of traditional cultural resources and historic properties with traditional cultural or religious significance. Tribal consultation included regularly scheduled and special meetings, as well as tribal site visits. Comments received from traditionally associated American Indian tribes and groups have been considered throughout the planning process. Yosemite officials will continue to consult with culturally associated tribes and groups throughout the EIS implementation process and will work directly with appropriate tribal government officials when plans or activities could have direct or indirect effects on traditional cultural resources, tribal interests, practices, traditional use areas and/or

sacred sites. **Table J-1** outlines tribal consultation meetings for the *Merced River Plan/DEIS* since July 2007.

The Yosemite National Park American Indian Consultation Program facilitates regulatory compliance with the National Historic Preservation Act; the National Environmental Policy Act; the Native American Graves Protection and Repatriation Act; and other statutes, policies, and guidance related to American Indian resources, issues, and concerns. The NPS will continue to conduct formal and informal consultations with traditionally-associated American Indian tribes and groups about proposed NPS plans and actions that have the potential to affect the treatment, use, and access to cultural and natural resources with documented or potential cultural meaning for those groups.

TABLE J- 1. TRIBAL CONSULTATION MEETINGS THROUGH DEC. 1, 2012

Merced Wild & Scenic River Comprehensive Management Plan/EIS Tribal Consultation Meetings (as of Dec. 1, 2012)			
Date	Meeting	Location	Participants with the NPS
July 2007	Annual All Tribes Meeting	Tuolumne Lodge, Yosemite	Bishop Paiute Tribe, Mono Lake Kudzadika[a], American Indian Council of Mariposa County (AICMC), Picayune Rancheria of Chukchansi Indians, Tuolumne Band of Me-Wuk Indians
July 2008	Annual All Tribes Meeting	Wawona Hotel Sunroom, Yosemite	Bishop Paiute Tribe, Mono Lake Kudzadika[a], AICMC, Picayune Rancheria of Chukchansi Indians, Tuolumne Band of Me-Wuk Indians
July 2009	Annual All Tribes Meeting	Tuolumne Lodge, Yosemite	Bishop Paiute Tribe, Mono Lake Kudzadika[a], AICMC, Picayune Rancheria of Chukchansi Indians, Tuolumne Band of Me-Wuk Indians, Bridgeport Indian Colony, North Fork Rancheria of Mono Indians of California
July 2010	Annual All Tribes Meeting	Yosemite Lodge, Yosemite	Bishop Paiute Tribe, Mono Lake Kudzadika[a], AICMC, Picayune Rancheria of Chukchansi Indians, Tuolumne Band of Me-Wuk Indians, Bridgeport Indian Colony, North Fork Rancheria of Mono Indians of California
February 2011	Quarterly Consultation Meeting	Tuolumne Band of Me-Wuk, Rancheria	Tuolumne Band of Me-Wuk Cultural Committee
August 2011	Annual All Tribes Meeting	Wawona Hotel, Yosemite	Mono Lake Kudzadika[a], AICMC, Picayune Rancheria of Chukchansi Indians, Tuolumne Band of Me-Wuk Indians, North Fork Rancheria of Mono Indians of California
September 2011	Monthly Tribal Council Meeting, AICMC	Mariposa	AICMC Tribal Council
December 2011	Consultation Meeting	Tuolumne Band of Me-Wuk, Rancheria	Tuolumne Band of Me-Wuk Cultural Committee
January 2012	Monthly Wahhoga Meeting	Mariposa	Wahhoga Committee
February 2012	Monthly Wahhoga Meeting	Mariposa	Wahhoga Committee
March 2012	Quarterly Consultation Meeting	Tuolumne Band of Me-Wuk, Rancheria	Tuolumne Band of Me-Wuk Cultural Committee
March 2012	Quarterly Consultation Meeting	North Fork Rancheria of Mono Indians of California	North Fork Rancheria of Mono Indians of California Tribal Council
July 13, 2012	Annual All Tribes Meeting	Lee Vining	Bishop Paiute Tribe, Mono Lake Kudzadika[a], AICMC, Picayune Rancheria of the Chukchansi Indians, Tuolumne Band of Me-Wuk, North Fork Rancheria of Mono Indians of California
July 17, 2013	Tribal Site Visit	Yosemite Valley	AICMC, Tuolumne Band of Me-Wuk Indians
Aug. 14, 2012	Tribal Site Visit	El Portal	AICMC, Tuolumne Band of Me-Wuk Indians
Aug.27, 2012	Quarterly Consultation Meeting	Tuolumne Band of Me-Wuk, Rancheria	Tuolumne Band of Me-Wuk Cultural Committee
Nov. 7, 2012	Tribal Site Visit	Yosemite Valley	AICMC

California State Historic Preservation Officer

The California State Office of Historic Preservation is responsible for administering federal- and state-mandated historic preservation programs to protect California's irreplaceable archaeological and historical resources. Consultation takes place under the direction of the State Historic Preservation Officer, a gubernatorial appointee. The NPS initiated consultation with the State Historic Preservation Office regarding the *Merced River Plan/DEIS* in June 2007. This consultation was initiated under the terms of the *1999 Programmatic Agreement among the National Park Service at Yosemite, the California State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP) Regarding Planning, Design, Construction, Operations, and Maintenance, Yosemite National Park, California* (1999 PA). The SHPO requested that consultation regarding the *Merced River Plan/DEIS* occur per the standard four-step process (per 36 CFR Part 800). In August 2012, the park agreed that consultation under the standard consultation process outlined in 36 CFR Part 800 would provide a more deliberative vehicle to address the plan's Section 106 compliance.

Yosemite met with the State Historic Preservation Officer on June 13, 2012, to discuss the planning effort, ORVs, and potential properties affected. On July 11, 2012, the SHPO visited the park and select historic properties potentially affected by the plan. In September 2012, the SHPO and other consulting parties participated in a conference call to discuss draft criteria for the historic resources component of the cultural ORV. Comments submitted by SHPO were considered in the development of the historic resources component of the cultural ORV.

Advisory Council on Historic Preservation

Yosemite initiated consultation with Advisory Council on Historic Preservation (ACHP) in May 2008 by notifying the agency that the park intended to prepare an Environmental Impact Statement (EIS) to comply with NHPA's Section 106. In August 2012, the NPS received a request from the ACHP to participate in the Merced River Plan as a consulting party from that point forward per 36 CFR Part 800.2(b). Consultation with ACHP will continue throughout the development of the plan-spcific programmatic agreemtn, and through implementation of the plan as stipulated in the programmatic agreement.

National Trust for Historic Preservation and the Historic Bridges Foundation

Consistent with 36 CFR Part 800.2(a)(4), the NPS formally initiated consultation with the National Trust for Historic Preservation (NTHP) on August 28, 2012, and the Historic Bridges Foundation (HBF) on August 23, 2012 following their requests for consulting party status. The NTHP and HBF are included on the project's mailing list, participated in relevant meetings in June, July, and September 2012 and were sent hard copies of public review documents and notification of public involvement opportunities. Additionally, these representatives from these organizations were included in focused discussions regarding the historic resources ORV in June, July, and September 2012.

36 CFR PART 800.4: IDENTIFICATION OF HISTORIC PROPERTIES

The proposed area of potential effects (APE) for the Merced River Plan is larger than the area encompassed by the proposed river boundary, to ensure that the effects of all actions are thoroughly considered. More specifically, the APE extends out 1.5 miles on each side of the river channel and includes those archeological and historic districts that extend beyond the ¼-mile river corridor.

Table J-2 lists all the listed and eligible properties in the APE. A number of cultural resources in the APE have not been evaluated for eligibility to the National Register. These resources are not listed in Table J-2 or analyzed in this document as they require evaluation and determination of eligibility, and assessment of effect prior to implementation of specific actions associated with the preferred alternative. Follow up compliance on particular projects will require phased identification and comprehensive evaluation of these resources per 36 CFR Part 800.4(b) and 800.4(c). Specific details of this phased process will be described in the plan-specific programmatic agreement which will be completed prior to the signing of the final decision document.

The percentage of archeological survey coverage varies by river segment. This coverage ranges from 70% in Yosemite Valley to 10% of the wild segment above Wawona. Additional subsurface testing for archeological resources may be necessary prior to implementation of particular actions.

Unevaluated or ineligiblesites may have religious and cultural significance not recognized through the NHPA process. The plan proposes to determine the eligibility and document the Yosemite Valley as a Traditional Cultural Property (or a portion thereof), consisting of traditional use areas, spiritual places and historic village sites as a necessary action to protect and enhance the ethnographic component of the cultural ORV in this river segment. Consultation with American Indian tribes and groups is ongoing and may result in solutions that improve conditions of important places and practices. Proposed treatment for all actions that may affect resources which may be of religious and cultural significance would involve close consultation with traditionally-associated American Indian tribes and groups to ensure these treatments considered their concerns.

TABLE J- 2. LIST OF HISTORIC PROPERTIES WITHIN THE AREA OF POTENTIAL EFFECTS

NATIONAL REGISTER LISTED OR ELIGIBLE PROPERTIES	Property Type	NR Status	Date
Acting Superintendent's Headquarters (1978000362)	Building	Listed	06/09/78
The Ahwahnee Hotel (1977000149: NHLS)	Building	Listed	02/15/77
Bagby Stationhouse (1979000316)	Building	Listed	04/13/79
Buck Creek Cabin	Building	Eligible	8/23/04
Camp 4 (2003000056)	Site	Listed	2/21/03
Camp Curry Village Historic District (1979000315)	District	Listed	11/01/79
Chris Jorgenson Studio (1979000280)	Building	Listed	04/13/79
El Portal Hotel	Building	Eligible	02/08/99
El Portal Historic Structures	Site	Eligible	02/08/99
El Portal Murchison House	Building	Eligible	02/08/99
El Portal Old Schoolhouse	Building	Listed	02/01/11
Glacier Point Road Historic District	District	Eligible	9/27/07
Glacier Point Trailside Museum (1978000375)	Building	Listed	04/04/78
Hetch Hetchy Railroad Engine No. 6 (1978000360)	Structure	Listed	01/30/78
Hodgdon Homestead Cabin (1978000356)	Structure	Listed	06/09/78
Le Conte Memorial Lodge (197700148: NHLS)	Structure	Listed	3/8/77
Mariposa Grove	District	Eligible	8/25/04
Mariposa Grove Museum (1978000381)	Building	Listed	12/01/78
McCauley Barn (1978000353)	Building	Listed	06/15/78
Merced Canyon Travel Corridor Historic District	District	Eligible	7/97
Merced Lake High Sierra Camp Historic District	District	Eligible	8/23/04
Merced Lake Ranger Station	Building	Eligible	8/23/04
National Lead Company	Building	Eligible	02/08/99
National Lead Company Residence Bldgs. No. 703 704 705	Building	Eligible	02/08/99
New Big Oak Flat Road	Structure	Eligible	8/23/04
Old Big Oak Flat Road	Structure	Eligible	8/23/04
Old Coulterville Road and Trail	Structure	Eligible	03/15/78
Pioneer Yosemite History Center	District	Eligible	09/06/11
Rangers' Club (1987001414: NHLS)	Building	Listed	5/28/87
Substation and Substation Control House No. 1	Building	Eligible	3/7/95
Track Bus No. 19 (1978000363)	Object	Listed	5/22/78
Wawona Covered Bridge (2006001261)	Structure	Listed	1/11/07
Wawona Tunnel	Structure	Eligible	8/23/04
Wawona Hotel and Pavilion (1975000223: NHLS)	District	Listed	10/1/75
Yosemite Hydroelectric Powerplant	Structure	Eligible	02/24/82
Yosemite Transportation Company Office (1978000355)	Building	Listed	06/09/78
Yosemite Valley Bridges Historic District (1977000160)	District	Listed	11/25/77

NATIONAL REGISTER LISTED OR ELIGIBLE PROPERTIES	Property Type	NR Status	Date
Yosemite Valley Chapel (1973000256)	Building	Listed	12/12/73
Yosemite Valley Historic District (2004001159)	District	Listed	12/14/06
Yosemite Valley Railroad Caboose No. 15 (1978000352)	Object	Listed	05/22/78
Yosemite Valley Railroad Residences	Structures	Eligible	02/08/99
Yosemite Village Historic District (1978000354)	District	Listed	3/30/78
		Amended	1/12/95
NATIONAL HISTORIC LANDMARKS	**Property Type**	**NHL Status**	**Date**
The Ahwahnee (1977000149)	Building	Listed	5/28/87
LeConte Memorial Lodge (1977000148)	Building	Listed	5/28/87
Rangers' Club (1987001414)	Building	Listed	5/28/87
Wawona Hotel and Thomas Hill Studio (1975000223)	District	Listed	5/28/87
ARCHEOLOGICAL DISTRICTS	**Property Type**	**NR Status**	**Date**
Eagle Peak Archeological District	District	Eligible	05/20/80
El Portal Archeological District (1978000359)	District	Listed	08/18/78
Mariposa Grove Archeological District	District	Eligible	05/20/80
Wawona Archeological District	District	Eligible	12/07/78
Yosemite Valley Archeological District (1978000361)	District	Listed	01/20/78
ARCHEOLOGICAL SITES (A detailed list of these resources is available upon request.)			
Prehistoric	329 sites		
Historic	70 sites		
Both	73 sites		
Total Archeological Sites	472 Sites		

36 CFR PART 800.5: ASSESSMENT OF ADVERSE EFFECTS

The assessment of effect in this document is organized by property within each river segment so that the number and kind of actions that may affect each resource can be assessed. Following 36 CFR Part 800.5, adverse effects are defined as those that "alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

A complete list of historic properties, proposed actions, and assessment of effect is included in Table J-2. The list below highlights potential adverse effects to components of historic properties that are proposed for removal or relocation in the preferred alternative:

Sugar Pine Bridge, 1928 – This bridge is proposed for removal under the preferred alternative in order to protect and enhance free-flowing condition of the river. The historic Sugar Pine Bridge is constricting the free-flowing condition of the Merced River and causing severe localized impacts to hydrologic function. While some other bridges in Yosemite Valley also constrict flow, the severe

impacts of Sugar Pine Bridge are due in part to its location at the upstream reach of an oxbow. This bridge is a contributor to the Yosemite Valley Bridges Historic District, the Yosemite Valley Historic District, and is a component of the Yosemite Valley Historic Resources ORV. The plan calls for documentation of the historic resource prior to removal, and interpretation of the bridge and the rationale for its removal. (Alternative 6 proposes to improve riverbank condition at Sugar Pine Bridge by increasing channel complexity through construction of constructed log jams, strategic placement of large wood, removal of rip rap, and bioengineering of the riverbank. This alternative specifies that if subsequent monitoring of riparian condition reveals insufficient protection of the free-flowing condition of the river within 10 years of the implementation of these actions, more aggressive management action may be initiated, including the possible removal of Sugar Pine Bridge.)

Ahwahnee Tennis Courts, c. 1930s – The Ahwahnee tennis courts, built after the initial construction of the hotel, would be removed in order to restore the earlier historic setting of the Ahwahnee Meadow and associated black oak woodland. This action was called for in the 1980 General Management Plan. The tennis courts are components of The Ahwahnee National Register nomination, the Yosemite Valley Historic District but are not included in The Ahwahnee NHL nomination or the Yosemite Valley Historic Resources ORV. The Ahwahnee Meadow is a contributor to the Yosemite Valley Historic District. Requirements for documentation and interpretation of the resource and restoration of the surrounding area are described in the Ahwahnee Cultural Landscape Report. Additional details will be determined through consultation and the plan-specific programmatic agreement.

Camp Curry Employee Cabins (Boys Town Cabins), 1930 – The 72 historic tent cabins and 14 historic cabins without bathrooms in this location are proposed for removal in the preferred alternative in order to replace the cabins with 98 hard-sided units with bathrooms. These historic cabins are contributors to the Yosemite Valley Historic District but not the Camp Curry Historic District. Employee housing in this area would be discontinued, and replaced with permanent housing units in the Huff House area. (Huff House is also a contributor to the Yosemite Valley Historic District.) This action would provide year-round lodging accommodations in Curry Village. Requirements for documentation and interpretation of the resources prior to removal will be determined through consultation and detailed in the plan-specific programmatic agreement.

Concessioner Headquarters Building, 1937-1939 – This building is a contributor to the Yosemite Valley Historic District but not the Yosemite Village Historic District. The preferred alternative proposes to remove the building and its function out of the river corridor. This action would address the WSRA requirement to reduce development in the river corridor that is not necessary for major public uses, in addition to allowing for the Yosemite Village Day-Use Parking Area to be moved northward out of the 150-foot riparian buffer. Requirements for documentation and interpretation of the resources prior to removal will be determined through consultation and detailed in the plan-specific programmatic agreement.

Curry Garage (Concessioner Garage) and 4 garages north of Curry Garage, 1920 – These buildings are contributors to the Yosemite Valley Historic District but not the Yosemite Village Historic District. The preferred alternative proposes to remove the buildings and their functions out of the river corridor. This action would address the WSRA requirement to reduce development in the river corridor that is not necessary for major public uses, in addition to allowing for the Yosemite Village

Day-Use Parking Area to be moved northward out of the 150-foot riparian buffer. Requirements for documentation and interpretation of the resources prior to removal will be determined through consultation and detailed in the plan-specific programmatic agreement.

Northside Drive, 1880s – Under the preferred alternative, Northside Drive would be re-routed to the south of the Yosemite Village Day-use Parking Area. This segment of roadway contributes as a structure and as a component of the circulation pattern in the Yosemite Valley Historic District A traffic circle at Northside Drive/Village Drive would be constructed to address traffic congestion and pedestrian/vehicle conflicts. This action will allow the Yosemite Village Day-Use Parking Area to be moved northward out of the 150-foot riparian buffer.. Requirements for documentation and interpretation of the resources prior to removal will be determined through consultation and detailed in the plan-specific programmatic agreement.

Superintendent's House and Garage (Residence 1), 1911/1929 – The preferred alternative proposes to relocate the residence and garage to a new location in the Yosemite Valley NPS housing area. This action would address the WSRA requirement to reduce development in the river corridor that is not necessary for major public uses, and will protect the historic structure from recurring flooding. This action was called for in the 1980 General Management Plan. The residence and the garage were listed as contributors to the Yosemite Valley Historic District and Yosemite Village Historic District, and are included in the Yosemite Valley Historic Resources ORV. The plan calls for documentation of the historic property prior to removal, and interpretation of the property and the rationale for its removal. (Alternative 6 proposes to rehabilitate the Superintendent's House and Garage (Residence 1) per Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012) in its existing location. This will preserve the historic fabric while preparing the structure to withstand periodic flooding. Contrary to Alternative 6 which includes "selective riverbank restoration", the preferred alternative removes infrastructure in the 100-year floodplain to the maximum extent possible.)

Due to the sensitive and confidential nature of archeological resources, the complete table and the determination of effects anticipated under the preferred alternative have been withheld from this document. Section 304 of NHPA requires federal agencies, or other public officials receiving grant assistance under the NHPA, to "withhold from disclosure to the public, information about the location, character, or ownership of a historic resource…" if the agency and the Secretary of the Interior agree that its release may (1) cause a significant invasion of privacy, (2) risk harm to the historic resource, or (3) impede the use of a traditional religious site by practitioners. In all cases, the park will consider effects to archeological resources in planning and avoid and/or mitigate effects wherever possible.

Locations of resources of religious and cultural significance are also protected under Section 304 of NHPA and thus the site-specific analysis of effects anticipated under the preferred alternative have been withheld from this document. The Yosemite Valley Historic District refers in very general terms to resources of religious and cultural significance to traditionally-associated American Indian tribes and groups . Beyond these general references, there are currently no listed or eligible historic properties within the APE. However, because resources of religious and cultural significance are mentioned in the Yosemite Valley Historic District nomination, currently-documented traditional use

areas are analyzed for adverse effects in compliance with NHPA. The plan proposes to determine the eligibility document the Yosemite Valley as a Traditional Cultural Property (or a portion thereof), consisting of traditional use areas, spiritual places and historic village sites as a necessary action to protect and enhance the ethnographic component of the cultural ORV in this river segment. Consultation with American Indian tribes and groups is ongoing and may result in solutions that improve conditions of important places and practices.

All River Segments

TABLE J- 3. ASSESSMENT OF EFFECTS FOR ACTIONS IN ALL RIVER SEGMENTS

Resources	Action	Effect	Comments
Historic resources			
Abandoned infrastructure	RES-AS-001 - Removal of abandoned underground infrastructure.	Pending additional analysis	
Archeological resources			
Confidential site location information withheld.			
Traditional Use Areas of Religious and Cultural Significance			
Confidential site location information withheld.			

Segment 1

TABLE J- 4. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 1

Resources	Action	Effect	Comments
Historic resources			
Merced Lake High Sierra Camp Historic District	ONA-1-003 - The reduction of the number of beds at the Merced Lake High Sierra Camp to 11 units (of an original 22)	No adverse effect	Reduction of beds will not result in the loss of contributing resources
Archeological resources			
None of the archeological sites in Segment 1 are listed, or have been determined to be eligible for the National Register of Historic Places.			
Traditional Use Areas with Religious and Cultural Significance			
None have been identified to date.			

Segment 2

TABLE J- 5. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 2

Resources	Action	Effect	Comments
Historic resources			
Yosemite Valley Historic District (2004001159)	RES-2-151 - Restoring the impacted portion of Ahwahnee Meadow to natural meadow conditions, through removal of tennis courts, irrigation, ditches, and restoration of topography	Adverse effect	Both the Ahwahnee Meadow and tennis courts are contributing features to the Yosemite Valley Historic District. Removal of the tennis courts will be an adverse effect Restoration of the meadow will have no adverse effect
	FAC-2-010 - Retaining the existing facilities and services at the Ahwahnee Hotel, and the removal of the swimming pool	No adverse effect	The swimming pool is a non contributing features to the Yosemite Valley Historic District.
	RES-2-008, RES-2-011, RES-2-012, RES-2-151, RES-2-153, TRAN-2-013 - Ecological restoration of Cook's, Sentinel, Ahwahnee, Stoneman Meadows	No adverse effect	Cook's, Sentinel, Ahwahnee, Stoneman Meadows are contributors to the Yosemite Valley Historic District.
	RES-2-068, RES-2-069, RES-2-070, RES-2-072, RES-2-075, RES-2-076, RES-2-077, RES-2-079, RES-2-080, RES-2-083, RES-2-087, RES-2-088, RES-2-091, RES-2-098, RES-2-099, RES-2-116, RES-2-117, RES-2-128 - Removal of encroaching conifers from Ahwahnee, El Capitan, Bridalveil, Cook's, and Sentinel meadows	No adverse effect	Ahwahnee, Bridalveil, Cook's, El Capitan, and Sentinel Meadows are contributors to the Yosemite Valley Historic District.
	TRAN-2-014 - Redesign and formalize the existing parking lot at the Ahwahnee Hotel	No Adverse Effect	
	TRAN-2-001 - Relocation of parking to the north of the road and re-routing Northside Drive south of the parking at Camp 6	Adverse effect	Northside Drive is a contributing resource to the Yosemite Valley Historic District. Rerouting of Northside Drive will be an adverse effect Relocation of parking will have no adverse effect

Resources	Action	Effect	Comments
Historic resources			
Yosemite Valley Historic District (2004001159) continued	FAC-2-002 - Repurposing the Government Utility Building building and rehabilitating Buildings 516, 518, and 519; six non-historic outbuildings would be removed or relocated; Law Enforcement operations and Valley Utilities would remain; a new roads and trails maintenance building would be built including four (4) vehicle bays with support functions.	Pending additional analysis	Government Utility building and rehabilitating Buildings 516, 518, and 519 are all contributing resources to the Yosemite Valley Historic District Construction of 4 vehicle bays would have possible adverse effect Adapting the for a new use would be consistent with the Secretary of the Interior's Standards for Rehabilitation to the greatest extent possible. This
			could avoid or minimize the potential for adverse effects.Rehabilitation of Buildings 516, 518, and 519 would have no adverse effect
	ONA-2-004 - Expansion of Camp 4 eastward to provide 35 walk-in sites	No adverse effect	Camp 4 is a contributing resource to the Yosemite Valley Historic District.
	TRAN-2-017 and TRAN-2-016 - Construction of a Shuttle Bus stop near Camp 4, and the establishment of a new parking lots for Camp 4 campground	No adverse effect	Camp 4 is a contributing resource to the Yosemite Valley Historic District
	FAC-2-012 - In Yosemite Lodge area, the removal of the NPS volunteer office, Yosemite Lodge housing (Thousands Cabins), Housing at Highland Court, Yosemite Lodge Post Office, Yosemite Lodge Pool and Snack Stand	Pending additional analysis	
	FAC-2-016 - Replacement of temporary employee housing at Huff House with 16 permanent buildings	Possible adverse effect	Huff House is a contributing resource to the Yosemite Valley Historic District, but not the Camp Curry Historic District
	FAC-2-011 - Removal of services at the ice skating rink at Curry Village	No adverse effect	The ice skating rink is a non-contributing resource to the Yosemite Valley Historic District, although the associated Camp Curry Bike Shop/Skate Rental Building is a contributor to the Yosemite Valley Historic District.
	FAC-2-015, TRAN-2-011, TRAN-2-021 - Construction of additional housing or facilities and redesign or repurposing of existing facilities at Yosemite Lodge	No adverse effect	Determination of Effect for Yosemite Lodge may determine adverse effection, pending additional analysis

Resources	Action	Effect	Comments
Historic resources			
Yosemite Valley Historic District (2004001159) continued	RES-2-009, RES-2-014, RES-2-020, RES-2-037 - Restoration of El Captain Meadow	No adverse effect	El Captain Meadow is a contributor to the Yosemite Valley Historic District.
	RES-2-005 and RES-2-029 - Rerouting the Valley Loop Trail, including the construction of boardwalks through sensitive habitat in Slaughterhouse Meadow	Possible adverse effect	Valley Loop Trail and Slaughterhouse Meadow are contributors to the Yosemite Valley Historic District.
	RES-2-053 - Engineer solutions, such as installation of large wood or culverts to Northside Drive, would be installed at Stoneman Bridge	No adverse effect	Stoneman Bridge is a contributor to the Yosemite Valley Historic District.
	RES-2-052 - Removal of Sugar Pine Bridge and restoration to natural conditions	Adverse effect	Sugar Pine Bridge is a contributor to the Yosemite Valley Historic District and Yosemite Valley Bridges Historic District.
	FAC-2-018 - Stabilization of Residence 1 (the Superintendent's House) and garage per the Secretary of the Interior's Standards for the Treatment of Historic Properties. Will happen in addition to relocation of buildings.	Adverse effect	Residence 1 is a contributor to the Yosemite Village Historic District.
	FAC-2-017, TRAN-2-009, ONA-2-010, ONA-2-011, ONA-2-005, ONA-2-016, ONA-2-012 - Construction of additional housing or facilities, including actions such as increased parking at Lost Arrow and West Valley Overflow, and camping at Upper Pines and the former Lower River Campground	Pending additional analysis	
	RES-2-008 and TRAN-2-007 - Formalization of the Curry Orchard Day Use Parking area	Adverse effect	Curry Orchard Parking area is a contributor to the Yosemite Valley Historic District.
	ONA-2-021 - Total would be 453 guest units, including: 290 tents in Curry Village retained; 98 hard-sided units in Boys Town constructed; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.	Adverse effect	73 historic employee canvas cabins and 14 hard-sided cabins at Boys Town are contributors to the Yosemite Valley Historic District.
	TRAN-2-020 - relocation and formalization of the parking to the north of the road and re-routing Northside Drive south of the parking at Yosemite Village Day-use Parking Area	Adverse effect	Northside Drive and the circulation patterns at this location are contributors to the Yosemite Valley Historic District.
Yosemite Valley Historic District (2004001159) continued	TRAN-2-001 - The construction of a traffic circle at Northside Drive and Village Drive (Yosemite Village Day-use Parking Area intersection)	Adverse effect	Northside Drive and the circulation patterns at this location are contributors to the Yosemite Valley Historic District

Resources	Action	Effect	Comments
Historic resources			
	RES-2-150 - Relocation of Residence 1 (the Superintendent's House) to the NPS housing area	Adverse effect	Residence 1 is a contributor to the Yosemite Village Historic District; relocation would also affect existing housing area, also a part of Yosemite Village Historic District
	RES-2-023 - Removal of 34 units from Housekeeping Camp	Pending additional analysis	
	FAC-2-015 - Construction of new employee housing or parking in the vicinity of Yosemite Lodge	Pending additional analysis	
The Ahwahnee Hotel (1977000149: NHLS)	RES-2-151 - Restoring the impacted portion of Ahwahnee Meadow to natural meadow conditions, through removal of tennis courts, irrigation, ditches, and restoration of topography.	Adverse effect	Both the Ahwahnee Meadow and tennis courts are contributing features to the Ahwahnee Hotel NR and the Yosemite Valley Historic District. The tennis courts are not contributors to the NHL. Removal of the tennis courts will be an adverse effect restoration of the meadow will have no adverse effect
	FAC-2-010 - Retaining the existing facilities and services at the Ahwahnee Hotel, and the removal of the swimming pool	No adverse effect	The swimming pool is a non contributing feature to the Ahwahnee Hotel NR and NHL.
	TRAN-2-014 - Redesign and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration	No adverse effect	
Ditches*	RES-2-001 - Fill 2,155' of ditches throughout Segment 2 not serving current operational needs	Possible adverse effect	Pending additional analysis
Camp 4 (2003000056)	ONA-2-004 - Expansion of Camp 4 eastward to provide 35 walk-in sites	No adverse effect	
	TRAN-2-017 and TRAN-2-016 - Construction of a Shuttle Bus stop near Camp 4, and the establishment of a new parking lots for Camp 4 campground	No adverse effect	

Resources	Action	Effect	Comments
Historic resources			
	TRAN-2-016 - In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground. Additionally, construct a new 25-space overflow parking lot on the south side of Northside Drive.	No adverse effect	
Yosemite Lodge*	FAC-2-012 - In Yosemite Lodge area, the removal of the NPS volunteer office, Yosemite Lodge housing (Thousands Cabins), Housing at Highland Court, Yosemite Lodge Post Office, Yosemite Lodge Pool and Snack Stand	Pending additional analysis	
	FAC-2-015 - Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces in the vicinity of Yosemite Lodge	Pending additional analysis	
Yosemite Valley Bridges Historic District (1977000160)	RES-2-053 - Engineer solutions, such as installation of large wood or culverts to Northside Drive, would be installed at Stoneman Bridge, Clark's Bridge, Sentinel Bridge, Sentinel Bridge, and Superintendent's Bridge	No adverse effect	Stoneman Bridge is a contributor to the Yosemite Valley Bridges Historic District.
	RES-2-052 - Removal of Sugar Pine Bridge and restoration to natural conditions	Adverse effect	Sugar Pine Bridge is a contributor to the Yosemite Valley Bridges Historic District.
Yosemite Village Historic District	TRAN-2-001 - The construction of a traffic circle at Northside Drive and Village Drive at Camp 6	Adverse effect	Village Drive is a contributor to the Yosemite Village Historic District
Merced Canyon Travel Corridor Historic District	RES-2-065 - Pave and formalize 5 roadside pull-outs for river access between Pohono Bridge and the intersection of the Big Oak Flat Road. Install curbing. Completely remove one pull-out that is not protective of resources. Install drainage improvements and head walls at 11 locations.	Pending additional analysis	
Archeological resources			
Confidential site location information withheld.			
Traditional Use areas with Religious and Cultural Significance			
Confidential location information withheld.			

Segment 3

TABLE J- 6. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 3

Resources	Action	Effect	Comments
Historic resources			
Merced Canyon Travel Corridor Historic District	RES-3-001 Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	Pending additional analysis	
Archeological resources			
Confidential site location information withheld.			
Traditional Use Area with Religious and Cultural Significance			
None identified to date.			

Segment 4

TABLE J- 7. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 4

Resources	Action	Effect	Comments
Historic resources			
El Portal Historic Structures	FAC-4-004 - construction of additional concessioner housing in the Rancheria area of El Portal	Pending additional analysis	
El Portal Historic Structures	construction of 12 infill housing units in vacant lots in old El Portal	Pending additional analysis	
El Portal Historic Structures	FAC-4-002 - The removal or relocation of 36 existing private residences in Abbieville or Trailer Village areas	Pending additional analysis	
Archeological resources			
Confidential site location information withheld.			
Traditional Use Area with Religious and Cultural Significance			
None identified to date.			

Segment 5

TABLE J- 8. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 5

Resources	Action	Effect	Comments
Historic resources			
None identified to date.			
Archeological resources			
Confidential site location information withheld.			
Traditional Use Area with Religious and Cultural Significance			
None identified to date.			

Segment 6

TABLE J- 9. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 6

Resources	Action	Effect	Comments
Historic resources			
None identified to date.			
Archeological resources			
Confidential site location information withheld.			
Traditional Use Areas with Religious and Cultural Significance			
None identified to date.			

Segment 7

TABLE J- 10. ASSESSMENT OF EFFECTS FOR ACTIONS IN SEGMENT 7

Resources	Action	Effect	Comments
Historic resources			
Historic Buildings in Wawona	Construct a 4,500 square foot building and grounds maintenance facility, a 6,800 square foot combined structural and wild land fire station, and a 4,000 square foot roads maintenance facility, and rehabilitate the existing California Conservation Corp (CCC) structures for potential re-use	Pending additional analysis	
Community of Wawona	removal of shoulder and off-road parking	No adverse effect	
Community of Wawona	redesign of the bus stop at Wawona	No adverse effect	
Wawona Hotel and Pavillion Historic District	Following the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in "poor" condition at Main Hotel, Manager's Cottage, and Annex Building, and Clark Cottage to bring the building to "good" condition would have no adverse effect on historic resources	No adverse effect	Action intended to protect Historic Resources
Archeological resources			
Confidential site location information withheld.			
Traditional Use Areas with Religious and Cultural Significance			
None identified to date.			

36 CFR 800.6: RESOLUTION OF ADVERSE EFFECT

To comply with Section 106 under the standard four-step process, the park is working with ACHP, SHPO, traditionally-associated American Indian tribes and grous, and other consulting parties to develop a plan-specific programmatic agreement regarding the implementation of the *Merced River Plan/DEIS*. This programmatic agreement is being developed concurrently with this plan and will be included as an appendix of the final plan. Parties to this agreement include the ACHP, the State Historic Preservation Officer, traditionally-associated American Indian tribes and groups, the National Trust for Historic Preservation, and the Historic Bridges Foundation. Consultation with these groups will continue throughout plan development and implementation.

APPENDIX K

MANAGEMENT CONSIDERATIONS AND ACTIONS

APPENDIX K
MANAGEMENT CONSIDERATIONS AND ACTIONS

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
ONA-1-001	1	Little Yosemite Valley Camping Area	Crowding at Little Yosemite Valley designated camping area impacts Wilderness character and the Wilderness experience integral to the Recreation ORV in this segment.		Little Yosemite Valley designated camping area and associated infrastructure includes composting toilet and bear boxes.	Discontinue designated camping at Little Yosemite Valley camping area, and remove infrastructure, including composting toilet. Allow dispersed camping in this area.	Discontinue designated camping at Little Yosemite Valley camping area, and remove infrastructure, and retain composting toilet. Allow dispersed camping in this area.	Decrease the designated camping area at Little Yosemite Valley; retain composting toilet.	Continue designated camping at Little Yosemite Valley camping area. Retain infrastructure, such as composting toilet.	Continue designated camping at Little Yosemite Valley camping area. Retain infrastructure, such as composting toilet.
ONA-1-002	1	Merced Lake Backpackers Camping Area	Levels of use in the Merced Lake Zone affect Wilderness character and the Wilderness experience integral to the Recreation ORV in this segment.		Infrastructure at the Merced Lake Backpackers Camping Area includes designated camping area, a water system with flush toilets, and bear boxes for food storage.	Discontinue designated camping at the Merced Lake Backpackers Camping Area. Allow dispersed camping in the areas of the former Merced Lake Backpackers Camping Area and the Merced Lake High Sierra Camp; remove flush toilets and waste-water system.	Discontinue designated camping at the Merced Lake Backpackers Camping Area. Allow dispersed camping in the areas of the former Merced Lake Backpackers Camping Area and portions of the Merced Lake High Sierra Camp; replace flush toilets with composting toilet and remove waste-water system.	Expand Merced Lake Backpackers Camping Area, which is designated camping, into the area of former Merced Lake High Sierra Camp; replace flush toilets with composting toilet and remove waste-water system.	Retain location of the Merced Lake Backpackers Camping Area as a designated camping area. Replace flush toilets with composting toilet.	Retain location of the Merced Lake Backpackers Camping Area as a designated camping area. Replace flush toilets with composting toilet.
ONA-1-003	1	Merced Lake High Sierra Camp: Lodging	Merced Lake High Sierra Camp affects Wilderness character and the Wilderness experience integral to the Recreation ORV in this segment and is a visual impact on the Scenery ORV.		There are 22 units (60 beds) at Merced Lake High Sierra Camp.	Close Merced Lake High Sierra Camp and allow dispersed camping at Merced Lake Backpackers Camping Area into the High Sierra Camp footprint. Convert area to designated Wilderness.	Convert Merced Lake High Sierra Camp to a temporary pack camp with a maximum of 15 people allowed. Remove all permanent infrastructure. Convert area to designated Wilderness.	Close Merced Lake High Sierra Camp and restore the area to natural conditions. Area would be converted to designated Wilderness.	Retain the Merced Lake High Sierra Camp, reducing the capacity to 11 units (42 beds). Replace the flush toilets with composting toilet.	Retain the Merced Lake High Sierra Camp, keeping 22 units (60 beds). Replace the flush toilets with composting toilet.
ONA-1-004	1	Moraine Dome Camping Area	Requiring people to camp in designated camping areas in the Wilderness impacts the experience of unconfined recreation.		Moraine Dome designated camping area offers would maintain its current location and function.	Discontinue designated camping at Moraine Dome. Allow dispersed camping in this area.	Discontinue designated camping at Moraine Dome. Allow dispersed camping in this area.	Continue designated camping at Moraine Dome.	Continue designated camping at Moraine Dome.	Continue designated camping at Moraine Dome.
ONA-1-005	1	Wilderness Zone Capacity within the River Corridor	Encounter rates on trails between Little Yosemite Valley and Merced Lake indicate wilderness experience integral to Recreation ORV in this segment is temporally and spatially impacted.		The Wilderness trailhead quota system is managed by backcountry zone capacities and related trailhead quotas.	Manage to a capacity of 25 in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.	Manage to a capacity of 75 in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.	Manage to a capacity of 100 in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.	All zone capacities within the Merced WSR Corridor remain the same.	All zone capacities within the Merced WSR Corridor remain the same.
RES-1-001	1	Special-status plants affected by trails	Trails through sensitive habitats may directly and indirectly affect special status plants.	Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special status habitat.	Trails through sensitive habitats have direct and indirect affect on special-status plants.	(CTA) Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special-status habitat.	(CTA) Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special-status habitat.	(CTA) Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special-status habitat.	(CTA) Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special-status habitat.	(CTA) Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special-status habitat.
RES-1-002	1	Merced Lake East Meadow near the Merced Lake Ranger Station Meadow: grazing	The Merced Lake East Meadow near the Merced Lake Ranger Station Meadow has impacts from grazing such as heavily grazed vegetation, roll pits, manure, and trampled soils leading to a localized adverse impact on the meadow.		The Merced Lake East Meadow near the Merced Lake Ranger Station Meadow reflects high levels of bare ground and trampling associated with high levels of administrative pack stock grazing.	Remove the Merced Lake East Meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.	Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.	Remove the Merced Lake East Meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.	Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.	Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.
RES-1-003	1	Merced Lake Shore Meadow: informal trails	Informal trails in Merced Lake Shore Meadow, adjacent the Merced High Sierra Camp, fragments meadow habitat and stunts vegetation lining the lake shore.	Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.	There is a network of informal trails in Merced Lake Shore Meadow, adjacent to the Merced High Sierra Camp.	(CTA) Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.	(CTA) Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.	(CTA) Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.	(CTA) Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.	(CTA) Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
RES-1-004	1	Special status plants: trail impacts	Sections of trails in Wilderness or foot traffic deviating from these trails impact special status plants or sensitive habitat. These include wetlands in Echo Valley; a mineral spring outflow between Merced Lake and Washburn Lake; the wet section of the Mist Trail; and along high traffic sections of the John Muir Trail.	Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.	There are impacts on special status plants or associated habitat associated with trails and foot traffic in wetlands in Echo Valley; a mineral spring outflow between Merced Lake and Washburn Lake; the wet section of the Mist Trail; and along high traffic sections of the John Muir Trail.	(CTA) Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.	(CTA) Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.	(CTA) Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.	(CTA) Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.	(CTA) Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening. Prevent trail creep along the John Muir Trail using fencing and boardwalks.
RES-1-005	1	Triple Fork Peak: trails through meadows	Formal trail through meadows causes extensive rutting and head cutting.	Reroute the trail to upland where possible.	The trail is rutted and braided as it traverses meadows in the Triple Peak Fork, which can affect surface and subsurface water flows that sustain the meadow.	(CTA) Re-route the trail to upland where possible.	(CTA) Re-route the trail to upland where possible.	(CTA) Re-route the trail to upland where possible.	(CTA) R-eroute the trail to upland where possible.	(CTA) Re-route the trail to upland where possible.
FAC-2-001	2	Yosemite Village: Concessioner General Office	The Concessioner General Office is located in the Valley. Employees correspondingly work and live in the Valley, so that they are close to their office.	Concessioner General Office building is removed from river corridor and essential functions infilled into the Concessioner Maintenance and Warehouse Building (behind the Valley Visitor Center).	The Concessioner General Office is located in the Valley. Employees correspondingly work and live in the Valley so that they are close to their office.	(CTA) Building is removed from river corridor.Essential functions infilled into the mezzanine of the existing Concessioner Maintenance and Warehouse Building behind Valley Visitor Center.	(CTA) Building is removed from river corridor.Essential functions infilled into the mezzanine of the existing Concessioner Maintenance and Warehouse Building behind Valley Visitor Center.	(CTA) Building is removed from river corridor.Essential functions infilled into the mezzanine of the existing Concessioner Maintenance and Warehouse Building behind Valley Visitor Center.	(CTA) Building is removed from river corridor.Essential functions infilled into the mezzanine of the existing Concessioner Maintenance and Warehouse Building behind Valley Visitor Center.	(CTA) Building is removed from river corridor.Essential functions infilled into a re-modeled Concessioner Maintenance and Warehouse Building with a 4,000-square-foot addition.
FAC-2-002	2	Yosemite Village: Concessioner Garage Relocation	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use. There is also a need for day use parking.	The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and the Yosemite Village Day-Use Parking Area is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.	The Concessioner Garage is located in the river corridor, within the 100-year floodplain. Shuttles, tour buses, visitor and concessioner vehicles are serviced in this facility.	(CTA) The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and parking is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.	(CTA) The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and the Yosemite Village Day-Use Parking Area is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.	(CTA) The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and the Yosemite Village Day-Use Parking Area is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.	(CTA) The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and the Yosemite Village Day-Use Parking Area parking is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.	(CTA) The Concessioner garage service is relocated to the Government Utility Building, outside of the corridor. The building is removed, and the Yosemite Village Day-Use Parking Area parking is expanded into the previous footprint. Visitor vehicle services are expanded in El Portal and Wawona service stations. Construct a two-bay roads and trails maintenance building in proximity to the Government Utility Building.
FAC-2-004	2	Housekeeping Camp: Lodging	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		Currently, there are 266 units at Housekeeping Camp within the 100-year floodplain.	Remove all lodging units and Housekeeping Camp amenities. Restore the 100-year floodplain to natural conditions.	Remove all of the lodging units. Convert Housekeeping Camp to a day use river access point and picnic area.	Remove 166 lodging units (83 duplex lodging units, 4 restrooms, store and office) out of the observed ordinary high water mark. Retain a total of 100 lodging units.	Remove 34 lodging units and redesign out of the ordinary high water mark. Retain a total of 232 lodging units.	Remove 34 lodging units and redesign out of the ordinary high water mark. Retain a total of 232 lodging units.
FAC-2-008	2	Housekeeping Camp: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		Visitor-use facilities at Housekeeping Camp include: shower houses & restrooms, laundry and a grocery store.	Housekeeping Camp shower houses, laundry and grocery store are removed. Retain at least one restroom for day use.	Housekeeping Camp shower houses, laundry and grocery store are removed. Retain at least one restroom for day use.	Housekeeping Camp restrooms are reduced. Shower houses and laundry remains. Grocery store removed.	Housekeeping Camp shower houses and restrooms and the laundry remains. Grocery store removed.	Housekeeping Camp shower houses, restrooms, laundry, and grocery store remain.
FAC-2-010	2	Ahwahnee Hotel: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.	Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.	The Ahwahnee Hotel, a National Historic Landmark, has services and facilities that include bar and food service, dining room, gift shop, sweet shop, pool, and tennis courts.	(CTA) Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.	(CTA) Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.	(CTA) Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.	(CTA) Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.	(CTA) Retain the existing facilities and services, including bar and food service, dining room, gift shop, and sweet shop. Remove pool and tennis courts.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
FAC-2-011	2	Curry Village: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.	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, the Curry Village bike and raft stands and the Curry Village ice rink.	Retain Curry grocery store, pizza deck and bar, pavilion and cafeteria, Happy Isles Nature Center and retail, swimming pool, Happy Isles Snack Stand, Curry Village bike and raft stands, and Curry Village ice rink. Retain lodging units in the rock-fall hazard zone.	(CTA) 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, the Curry Village bike and raft stands, and the Curry Village ice rink.	(CTA) 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, the Curry Village bike and raft stands, and Curry Village ice rink.	(CTA) 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, the Curry Village bike stand, and Curry Village ice rink.	(CTA) 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, the Curry Village bike and raft stands, and Curry Village ice rink.	(CTA) 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, the Curry Village bike and raft stands, and Curry Village ice rink.
FAC-2-012	2	Yosemite Lodge: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.	Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed. The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained.	Yosemite Lodge services and facilities would be retained in current configuration and at current level of service.	Yosemite Lodge converted from lodging to day-use. Retain core visitor services. Re-design lodge area to include 250 parking spaces. Mountain Room Bar & Food Service is re-purposed as a Day Lodge. Yosemite Lodge maintenance and housekeeping are removed. (CTA) Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed. The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained.	Yosemite Lodge maintenance and housekeeping are relocated. Removed temporary employee housing to be replaced with new housing. (CTA) Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed . The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained. Yosemite Lodge maintenance and housekeeping are relocated.	Yosemite Lodge maintenance and housekeeping are relocated. Removed temporary employee housing to be replaced with new housing. (CTA) Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed. The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained. Yosemite Lodge maintenance and housekeeping are relocated.	Yosemite Lodge maintenance and housekeeping are relocated. Removed temporary employee housing to be replaced with new housing. (CTA) Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed. The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained. Yosemite Lodge maintenance and housekeeping are relocated.	Yosemite Lodge maintenance and housekeeping are relocated. Removed temporary employee housing to be replaced with new housing. (CTA) Remove the NPS Volunteer Office (former Wellness Center), post office, swimming pool, bike stand and snack stand. Yosemite Lodge employee housing (Thousands Cabins) and Highland Court employee housing are removed. The convenience shop and nature shop are re-purposed. The Yosemite Lodge Food Court is retained. Yosemite Lodge maintenance and housekeeping are relocated.
FAC-2-013	2	Yosemite Village: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.	The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the essential functions are relocated within the existing Concessioner Maintenance and Warehouse building. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.	The configuration and level of services and facilities in Yosemite Village remains unchanged.	(CTA) The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the essential functions are relocated within the existing Concessioner Maintenance and Warehouse building. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.	(CTA) The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the essential functions are relocated within the existing Concessioner Maintenance and Warehouse building. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.	(CTA) The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the essential functions are relocated within the existing Concessioner Maintenance and Warehouse building. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.	(CTA) The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the essential functions are relocated within the existing Concessioner Maintenance and Warehouse building. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.	Infill the Concessioner General Office functions within a 4,000-square-foot addition to the Concessioner Maintenance and Warehouse Building.(CTA) The Concessioner Garage building is removed, and the service is relocated to the Government Utility Building. The Concessioner General Office building is removed, and the service is relocated. The Village Sport Shop is re-purposed as a visitor contact station. The Village Store and Grill are retained.
FAC-2-015	2	Yosemite Lodge: Housing north of former pine and oak and west of Yosemite Lodge Food Court	There is temporary employee housing in the Yosemite Lodge area.	Remove old and temporary housing at Highland Court and the Thousands Cabins.	There is temporary employee housing in the Yosemite Lodge area at Highland Court and the Thousands Cabins.	(CTA) Remove old and temporary housing at Highland Court and the Thousands Cabins.	(CTA) Remove old and temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces.	(CTA) Remove old and temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces.	(CTA) Remove old and temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces.	(CTA) Remove old and temporary housing at Highland Court and the Thousands Cabins. Construct two new concessioner housing areas housing 104 employees (26 in each structure/double occupancy). Construct 78 employee parking spaces.
FAC-2-016	2	Huff House temporary housing area	Currently, there is temporary housing at Huff House.	Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.	Currently, there is temporary housing at Huff House and Boys Town.	(CTA) Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.	(CTA) Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.	(CTA) Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.	(CTA) Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.	(CTA) Temporary housing at Huff House and Boys Town is removed. Construct 16 buildings, housing 164 employees using the same dormitory prototype.
FAC-2-017	2	Yosemite Village: Lost Arrow temporary employee housing	Currently, there is temporary employee housing in the Lost Arrow parking lot.		There is temporary employee housing in the Lost Arrow parking lot.	Remove temporary employee housing and re-establish an administrative parking lot with 50 spaces.	Remove temporary employee housing and re-establish an administrative parking lot with 50 spaces.	Replace temporary employee housing facilities with permanent housing facilities for 50 beds.	Replace temporary employee housing facilities with permanent housing facilities for 50 beds.	Replace temporary employee housing facilities with permanent housing facilities for 50 beds.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
FAC-2-018	2	Residence 1: Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		Residence 1, also known as the Superintendent's House, would remain in place.	Residence 1, which is the Superintendent's House, is relocated outside the river corridor to the NPS housing area.	Residence 1, which is the Superintendent's House, is relocated outside of the river corridor to the NPS housing area.	Residence 1, which is the Superintendent's House, is relocated outside of the river corridor to the NPS housing area.	Residence 1, which is the Superintendent's House, is relocated outside of the river corridor to the NPS housing area.	Residence 1, which is also known as the Superintendent's House, remains in place.
ONA-2-001	2	Backpackers Campground	Campsites in Backpackers Campground are located in close proximity to the river.		There are a total of 25 walk-in sites in the inventory, including 2 administrative sites.	Remove all 25 walk-in sites, 21 of which are in the 100-year floodplain. Partially replace removed sites with 16 sites at Backpackers Campground Western Expansion.	Remove all 25 walk-in sites, 21 of which are within the 150-foot riparian buffer. Partially replace removed sites with 16 sites at Backpackers Campground Western Expansion.	Remove all 25 walk-in sites, 21 of which are within the 150-foot riparian buffer. Partially replace removed sites with 16 sites at Backpackers Campground Western Expansion.	Retain 10 walk-in sites and remove 15 walk-in sites within the 100-foot riparian buffer. Partially replace removed sites with 16 walk-in sites at Backpackers Campground Western Expansion.	Retain 10 walk-in sites and remove 15 walk-in sites within the 100-foot riparian buffer. Partially replace removed sites with 16 walk-in sites at Backpackers Campground Western Expansion.
ONA-2-002	2	Concessioner Stables in Yosemite Valley	The Concessioner Stables in Yosemite Valley are used by the concessioner to house the stock animals used to operate the High Sierra Camp and day rides in the Valley. The herd has decreased in size, but the facility footprint remains the same. A kennel service is also operated out of the stables.		The Concessioner Stables in Yosemite Valley are used by the concessioner to house the stock animals used to operate the High Sierra Camp and day rides in the Valley. The herd has decreased in size, but the facility footprint remains the same. A kennel service is also operated out of the stables.	Ecologically restore the Concessioner Stables in Yosemite Valley; eliminate commercial day rides. Remove associated housing (25 beds).	Reduce the footprint of the Concessioner Stables in Yosemite Valley to provide staging for temporary pack camp operation at Merced Lake High Sierra Camp and overflow parking for campgrounds. Eliminate commercial day horseback rides from Yosemite Valley. Kennel service remains. Retain associated housing (25 beds).	Concessioner Stables area would be re-developed as a new campground with 41 campsites. Remove associated housing (25 beds). Eliminate commercial day horseback rides from Yosemite Valley.	Retain Concessioner Stables in Yosemite Valley to support Merced Lake High Sierra Camp and overflow parking for campgrounds. Eliminate commercial day horseback rides from Yosemite Valley. Kennel service remains. Retain associated housing (25 beds).	Retain Concessioner Stables in Yosemite Valley in its current configuration. Kennel service remains. Eliminate commercial day horseback rides from Yosemite Valley. Retain associated housing (25 beds).
ONA-2-003	2	Eagle Creek New Campground	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		No development exists in this currently disturbed area with no resource constraints.	No new camping added in this location.	No new camping added in this location.	No new camping added in this location.	New campground developed east of El Capitan Picnic Area with 40 drive-in car sites and 2 group campsites.	New campground developed east of El Capitan Picnic Area with 79 car and recreational vehicle sites.
ONA-2-004	2	Camp 4 Campground Eastward Expansion	Public comment indicated a desire to have more camping opportunities in Yosemite Valley. The rock-fall hazard study identified 8 campsites at Camp 4 that are within the rock-fall hazard zone.	Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4 (8 sites relocated out of the rock-fall hazard zone but remain within the Camp 4 footprint).	There is no development in this site east of Camp 4.	(CTA) Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4.	(CTA) Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4.	(CTA) Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4.	(CTA) Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4.	(CTA) Camp 4 expanded eastward to provide 35 additional walk-in sites. Retain 35 walk-in campsites at Camp 4.
ONA-2-005	2	Former Lower River Campground	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		Area is passively restoring to natural conditions. (138 campsites removed after damage from 1997 flood)	Restore area to natural conditions and no new campsites constructed.	Restore area to natural conditions and no new campsites constructed.	Construct a new campground 150 feet away from the river with 40 walk-in sites. Provide 8 picnic tables and 20 parking places for day use. Direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach. Restore hydrologic processes in the southeast portion of the former campground area and within the 150-foot riparian buffer.	Restore area to natural conditions and no new campsites constructed. Provide 8 picnic tables and 20 parking places for day use. Direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach. Restore hydrologic processes in the southeast portion of the former campground area.	Construct a new campground 150 feet away from the river with 40 walk-in sites. Provide 8 picnic tables and 20 parking places for day use. Direct visitors to access the river for boating and swimming by way of a path to the Housekeeping Camp eastern beach. Restore hydrologic processes in the southeast portion of the former campground area and within the 150-foot riparian buffer.
ONA-2-007	2	Lower Pines	Campsites in Lower Pines campground receive periodic flooding and are located in close proximity to the river.	Remove Lower Pine Loop between sites 60 and 62, because it is within the bed and banks of the river.	The campground contains 76 campsites (16 sites are for administrative use / 18 sites are RV-only).	Retain 44 campsites and restore the 100-year floodplain by removing 32 camp sites, including the loop between sites 60-62 that is within the bed and banks of the river. Restore native plant communities.	Retain 61 campsites and remove 15 sites from within 150 feet of the ordinary high water mark, including the loop between sites 60-62 that is within the bed and banks of the river. Restore native plant communities.	Retain 61 campsites and remove 15 sites from within 150 feet of the ordinary high water mark, including the loop between sites 60-62 that is within the bed and banks of the river. Restore native plant communities.	Retain 71 campsites and remove 5 sites from within 100 feet of the ordinary high water mark, including the loop between sites 60-62 that is within the bed and banks of the river. Restore native plant communities.	Retain 71 campsites and remove 5 sites from within 100 feet of the ordinary high water mark, including the loop between sites 60-62 that is within the bed and banks of the river. Restore native plant communities.
ONA-2-008	2	North Pines	Campsites in North Pines campground receive periodic flooding and are located in close proximity to the river.		The campground contains 86 campsites (5 are for administrative use, 23 sites are RV-only).	Restore the 100-year floodplain by removing 86 camp sites and restore native plant communities.	Retain 52 campsites and remove 34 sites from within 150 feet of the ordinary high water mark and restore native plant communities.	Retain 52 campsites and remove 34 sites from within 150 feet of the ordinary high water mark and restore native plant communities.	Retain 72 campsites and remove 14 sites from within 100 feet of the ordinary high water mark and restore native plant communities.	Retain 72 campsites and remove 14 sites from within 100 feet of the ordinary high water mark and restore native plant communities.
ONA-2-009	2	Upper Pines	Campsites in Upper Pines campground are located in close proximity to the river.		The campground inventory has 240 sites (2 are for administrative use, 44 RV only sites)	Retain 216 campsites and restore the 100-year floodplain by removing 22 campsites and an additional 2 sites for cultural resource concerns.	Retain 238 campsites, removing 2 sites for cultural resource concerns.	Retain 238 campsites, removing 2 sites for cultural resource concerns.	Retain 238 campsites, removing 2 sites for cultural resource concerns.	Retain 238 campsites, removing 2 sites for cultural resource concerns.

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ONA-2-010	2	Upper Pines Loop Addition	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		No new camping is developed in this location.	No new camping is developed in this location.	Camping new development: addition of recreational vehicle campground loop with 36 RV sites.	Camping new development: addition of recreational vehicle campground loop with 36 RV sites.	Camping new development: addition of recreational vehicle campground loop with 36 RV sites.	Camping new development: addition of recreational vehicle campground loop with 36 RV sites.
ONA-2-011	2	Upper Pines Walk-In Addition	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		No new camping is developed in this location.	No new camping is developed in this location.	No new camping is developed in this location.	Addition of walk-in campground with 51 sites, 49 walk-in sites and 2 group sites.	Addition of walk-in campground with 51 sites, 49 walk-in sites and 2 group sites.	Addition of walk-in campground with 51 sites, 49 walk-in sites and 2 group sites.
ONA-2-012	2	Backpackers Campground Western Expansion	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.	Construction of 16 new walk-in sites West of Backpackers Camp.	No new camping is developed in this location.	(CTA) Construction of 16 new walk-in sites West of Backpackers Camp.	(CTA) Construction of 16 new walk-in sites West of Backpackers Camp.	(CTA) Construction of 16 new walk-in sites West of Backpackers Camp.	(CTA) Construction of 16 new walk-in sites West of Backpackers Camp.	(CTA) Construction of 16 new walk-in sites West of Backpackers Camp.
ONA-2-013	2	West of Lodge New Campground	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		No development in this location.	Area used for parking. Yosemite Lodge converted from lodging to day use, parking and camping.	No new sites added.	Construct 20 RVs sites. (West of Parking)	No new sites added.	Construct 20 RVs sites. (West of Parking)
ONA-2-014	2	Yellow Pine Administrative	Yellow Pine Campground is currently only available for administrative use (4 group sites for up to 120 people.)		Yellow Pine Administrative Campground is only available for administrative use (4 group sites for up to 120 people.)	Remove camping and restore the 100-year floodplain to natural conditions. Shift administrative camping to Abbieville and Trailer Village.	Retain 4 group administrative use sites (up to 120 people).	Retain 4 group administrative use sites (up to 120 people).	Retain 4 group administrative use sites (up to 120 people).	Retain 4 group administrative use sites (up to 120 people).
ONA-2-015	2	Yosemite Lodge: re-purposed as camping	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		This site is currently an overnight lodging and parking area.	Remove the existing lodging structures (see Yosemite Lodge: Lodging) and construct 100 new walk-in campsites and 4 group sites.	No new sites constructed.	No new sites constructed.	No new sites constructed.	No new sites constructed.
ONA-2-016	2	Former Upper River Campground	Public comment indicated a desire to have more camping opportunities in Yosemite Valley.		Area is passively restoring to natural conditions (124 campsites removed after 1997 flood). Infrastructure such as asphalt, remains.	Restore area to natural conditions and no new campsites constructed.	Restore area to natural conditions and no new campsites constructed.	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. Restore hydrologic processes in the southeast portion of the former campground area.	Construct a new campground with 30 walk-in sites, north of the river a minimum of 150 feet away from the ordinary high-water mark. Restore hydrologic processes in the southeast portion of the former campground area.	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. Restore hydrologic processes in the southeast portion of the former campground area.
ONA-2-019	2	Yosemite Lodge: Lodging	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		There are 245 lodging units at Yosemite Lodge.	Remove all of the lodging units at Yosemite Lodge (-245 units). Re-purpose the area outside the 100-year floodplain for day-use parking, a Day Lodge (Mountain Room and food service) and camping (See Yosemite Lodge re-purposed as camping). Restore the 100-year floodplain.	Retain 143 units. Remove 4 buildings from the 100-year floodplain and restore the floodplain.	Retain the existing 245 units.	Retain the existing 245 units.	Construct new 3 story-lodging structure(s) with the pre-flood number of 440 units (redesign Yosemite Lodge out of the 100-year floodplain).
ONA-2-021	2	Curry Village: Lodging	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		There are 400 lodging units at Curry Village that can be counted in the "No-Action," per the Settlement Agreement; additional temporary guest lodging units currently in the Boys Town area are not considered part of the No Action Alternative.	Total would be 433 guest units, including: 290 tents in Curry Village retained; 78 hard-sided units in Boys Town constructed; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.	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 the area ecologically restored.	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.	Total would be 453 guest units, including: 290 tents in Curry Village retained; 98 hard-sided units in Boys Town constructed; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.	Total would be 453 guest units, including: 290 tents in Curry Village retained; 98 hard-sided units in Boys Town constructed; 18 units at Stoneman House retained; and 47 cabin-with-bath units in Curry Village retained.
REC-2-001	2	Bridalveil Fall Area Redesign	The popularity and location of this attraction site at periods of peak visitation has led to crowding and congestion, which negatively affects the visitor experience. Crowding and congestion occurs on trails, at the viewing platform, along roadways, and at the parking area.	(CTA) Re-design entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.	The existing design capacity of the pedestrian and vehicle circulation system at this popular attraction site does not accommodate the level of visitor use it receives. A network of social trails exists. Overflow roadside parking and traffic congestion frequently occurs. Neither the pedestrian walkways nor the restrooms meet current accessibility standards.	(CTA) Re-design entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.	(CTA) Re-design entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.	(CTA) Re-design entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.	(CTA) Redesign entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.	(CTA) Re-design entire area to improve the visitor experience by providing consistent pedestrian and vehicle capacities and flow to meet current demand. Restore informal trails to natural conditions. Improve accessibility to pedestrian walkways and restrooms where appropriate.

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REC-2-002	2	Interpretation of natural river processes	There are few (no) interpretive nature walks that educate the public on natural river processes and protection and stewardship of river-related resources.	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.	There are few (no) interpretive nature walks that educate the public on natural river processes and protection and stewardship of river-related resources.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.
REC-2-003	2	Happy Isles Wayfinding	Inadequate way finding and unclear pedestrian circulation are contributing factors to the vegetation trampling, causing a large area of denuded vegetation.	Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.	Inadequate way finding and unclear pedestrian circulation are contributing factors to the vegetation trampling.	(CTA) Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.	(CTA) Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.	(CTA) Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.	(CTA) Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.	(CTA) Improve way finding between Happy Isles and the Mist Trail from the shuttle stop.
RES-2-001	2	Valley Meadows: Ditching	Ditches impact meadows by increasing drainage and lowering the water table. This in turn impacts native meadow plant communities and corresponding ethnographic resources.	Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.	Human-constructed ditches would remain in meadows throughout Yosemite Valley.	(CTA) Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.	(CTA) Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.	(CTA) Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.	(CTA) Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.	(CTA) Fill 2,155 feet of ditches not serving current operational needs using adjacent berm material or pond and plug techniques.
RES-2-002	2	Yosemite Valley: Plant community changes	Synergistic effects of many factors, including natural selection and past human actions, have led to changes in Yosemite Valley plant communities that are ecologically connected to the meadow and riparian ecosystem of the Merced River. Changes in plant communities include increasing conifers, denser canopy covers, and high fuel loading.	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 re-design 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.	These plant communities will continue to become more densely forested, and the desirable mosaic of plant communities in the Merced River corridor will continue to become less diverse.	(CTA) 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 re-design 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.	(CTA) 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 re-design 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.	(CTA) 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 re-design 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.	(CTA) 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 re-design 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.	(CTA) 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 re-design 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.
RES-2-003	2	Ahwahnee Meadow oxbows: formal trail impacts	350 feet of trail through two segments of oxbow wetland limits hydrologic connectivity.		Formal trails would continue to traverse wetlands in the Ahwahnee meadow (350 feet long section of trail).	Re-route the trail so it does not pass through wetlands; consolidate use with Housekeeping Footbridge trail where possible. Remove that section of trail and its associated fill.	Re-route the trail so it does not pass through wetlands; consolidate use with Housekeeping Footbridge trail where possible. Remove that section of trail and its associated fill.	In the section of trail that passes through meadow and wet areas, remove fill and replace with a boardwalk.	In the section of trail that passes through meadow and wet areas, remove fill and replace with a boardwalk.	In the section of trail that passes through meadow and wet areas, remove fill and replace with a boardwalk.
RES-2-004	2	Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent	Ahwahnee Meadow: Northside Drive and bike path impact hydrology and meadow extent		Northside Drive and the adjacent bike path bisect Ahwahnee Meadow.	Remove 900 feet of road and relocate the bike path to the south, to improve meadow/river connectivity. Restore meadow contours and native vegetation.	Remove 900 feet of road and relocate the bike path to the south, to improve the meadow/river connectivity. Restore meadow contours and native vegetation.	Northside Drive remains. Improve hydrologic connectivity between both sides of the road, by increasing the number of culverts. Bike path remains alongside road.	Northside Drive remains. Improve hydrologic connectivity between both sides of the road, by increasing the number of culverts. Bike path remains alongside road.	Northside Drive remains. Improve hydrologic connectivity between both sides of the road, by increasing the number of culverts. Bike path remains alongside road.
RES-2-005	2	Valley Meadows: Valley Loop Trail impacts through meadows	The Valley Loop Trail passes through sensitive and sometimes inundated meadow habitat in Slaughterhouse Meadow and Bridalveil Meadow causing fragmentation, informal trail creation, soil compaction and vegetation trampling.	Re-vegetate the abandoned sections of trail with native meadow species.	The Valley Loop Trail passes through sensitive and sometimes inundated meadow habitat in Slaughterhouse Meadow and Bridalveil Meadow.	Re-route trail through Slaughterhouse Meadow out of wetlands to an upland area. Move 780 feet of the trail through Bridalveil Meadow 8-12 feet to the toe of the fill slope of Southside Drive.	Re-route trail through Slaughterhouse Meadow out of wetlands to an upland area. Move 780 feet of the trail through Bridalveil Meadow 8-12 feet to the toe of the fill slope of Southside Drive.	Re-route trail through Slaughterhouse Meadow out of wetlands to an upland area. Move 780 feet of the trail through Bridalveil Meadow 8-12 feet to the toe of the fill slope of Southside Drive.	Construct boardwalks through sensitive wet meadow habitat in Slaughterhouse Meadow. Move 780 feet of the trail that runs through Bridalveil Meadow to the toe of the fill slope of Southside Drive.	Construct boardwalks through sensitive wet meadow habitat in Slaughterhouse Meadow. Move 780 feet of the trail that runs through Bridalveil Meadow to the toe of the fill slope of Southside Drive.

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RES-2-007	2	Yosemite Village: Indian Creek Ahwahnee Row and Tecoya Housing	The Tecoya Housing is in the 100-year floodplain and Ahwahnee Row housing sits on former meadow and truncates the current western extent of Ahwahnee Meadow. These buildings and associated parking areas have been built on wetlands and affect the hydrologic processes of Indian Creek.	Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.	Tecoya dorm and Ahwahnee Row Housing would remain within the 100-year floodplain (buildings and associated parking areas).	(CTA) Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.Also, remove housing and development between Village Store and Ahwahnee Meadow, decompact soils, recontour topography (using 1919 maps as a guide) and plant native meadow vegetation. Restore stream hydrology.	(CTA) Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.Housing and development between Village Store and Ahwahnee Meadow remain.	(CTA) Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.Housing and development between Village Store and Ahwahnee Meadow remain.	(CTA) Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.Housing and development between Village Store and Ahwahnee Meadow remain.	(CTA) Create a buffer zone for Indian Creek by pulling parking and residential yard use back 50 feet. Restore native riparian vegetation and protect with restoration fencing. Heavy equipment including excavator, skid steer, loader, and dump truck would be used.Housing and development between Village Store and Ahwahnee Meadow remain.
RES-2-008	2	Stoneman Meadow and Curry Orchard parking lot: road through meadow and parking lot	Stoneman Meadow is bisected by Southside Drive. The elevated road prism disconnects surface and groundwater within the meadow. This impacts the high water table, which is critical to maintain the integrity of meadow habitat. Curry Village orchard parking area is in what was formerly Stoneman Meadow, which has an impact on the meadow extent related to the Biological ORV.		Stoneman Meadow is bisected by Southside Drive. Curry Village orchard parking area is in what was formerly Stoneman Meadow.	Restore Stoneman Meadow including removal of 1,335 feet of Southside Drive and re-alignment of road through Boys Town area. The Orchard Parking Lot would be re-designed and engineering solutions applied to promote water flow and improve meadow health to increase drainage from the cliff walls to Stoneman Meadow. Remove apple trees and landscape with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275 feet).	Restore Stoneman Meadow including removal of 1,335 feet of Southside Drive and realignment of road through Boys Town area. The Orchard Parking Lot would be re-designed and engineering solutions applied to promote water flow and improve meadow health to increase drainage from the cliff walls to Stoneman Meadow. Remove apple trees and landscape with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275 feet).	Restore Stoneman Meadow including removal of 1,335 feet of Southside Drive and realignment of road through Boys Town area. The Orchard Parking Lot would be re-designed and engineering solutions applied to promote water flow and improve meadow health to increase drainage from the cliff walls to Stoneman Meadow. Remove apple trees and landscape with native vegetation. Extend the meadow boardwalk through wet areas to Curry Village (up to 275 feet).	The Orchard Parking Lot would be re-designed and engineering solutions applied to promote water flow and improve meadow health to increase drainage from the cliff walls to Stoneman Meadow. Remove apple trees and landscape with native vegetation.	The Orchard Parking Lot would be re-designed and engineering solutions applied to promote water flow and improve meadow health to increase drainage from the cliff walls to Stoneman Meadow. Remove apple trees and landscape with native vegetation.
RES-2-009	2	El Capitan Meadow: Informal trails, bisected by road, conifer encroachment	Climber use trails dissect El Capitan Meadow on the north side. Informal trails through the meadow and associated oak woodland lead to vegetation trampling and soil compaction. Water pools on the north side of the road, blocking water flows between the adjacent cliff walls and the meadow. Conifer saplings are encroaching on the meadow, resulting in the loss of meadow habitat. Roadside parking remains curbed to prevent encroachment on meadow.	Reroute 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.	Soil compaction and trampled vegetation would continue to exist due to informal trails and easy access to the meadow from roadside parking. 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.	Remove all informal trails and areas of bare compacted soils and restore to native plan communities. Disperse and reduce roadside parking along the meadow through alternative pavement striping (approximately 30 spaces removed). Retain some roadside parking for SAR and other administrative traffic. Use restoration fencing and signing where necessary to further protect the meadow from trampling.	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 and signing to designate appropriate meadow access points.	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.	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. Selectively remove mature conifers that block views of El Capitan from the roadside.	Restore all informal trails to the meadow. 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.

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RES-2-010	2	Bridalveil Meadow: stream headcutting and absence of willows	A deep headcut from a former ditch remains adjacent to Bridalveil Meadow, which subsequently causes meadow dewatering and heavy downstream erosion. Willows were once abundant in Bridalveil meadow. They do not easily regenerate after wholesale removal and thus the meadow has remained without willows for over a century, resulting in less biological diversity in the meadow.	Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.	A deep headcut from a former ditch remains adjacent to Bridalveil Meadow. Willows were once abundant in Bridalveil meadow. They do not easily regenerate after wholesale removal and thus the meadow has remained without willows for over a century, resulting in less biological diversity in the meadow.	(CTA) Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.	(CTA) Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.	(CTA) Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.	(CTA) Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.	(CTA) Treat by inserting live willow cuttings into the headcut area, river bank and adjacent meadow. Address headcuts in stream on west edge of meadow by planting willow cuttings in the impacted area, along riverbank, and adjacent meadow. Re-establish the riparian shrub layer. Remove encroaching conifer saplings.
RES-2-011	2	Cook's Meadow: roadbed abandoned infrastructure	There is an abandoned road bed north of Northside Drive between the Rangers' Club and the three-way stop that was former meadow habitat.	Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.	There is an abandoned road bed north of Northside Drive between the Rangers' Club and the three-way stop that was former meadow habitat.	(CTA) Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.	(CTA) Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.	(CTA) Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.	(CTA) Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.	(CTA) Remove fill of a former road bed north of Northside Drive between the Rangers' Club and the three-way stop. Revegetate with native meadow species.
RES-2-012	2	Cook's Meadow: informal shoulder parking	Informal shoulder parking is encroaching on Cook's Meadow at both Sentinel Drive and Northside Drive. The footprint has increased over time (now up to 25-foot impact) and subsequently reduced the meadow extent.	Remove roadside parking along Cook's meadow and restore to meadow conditions.	Informal shoulder parking is encroaching on Cook's Meadow at both Sentinel Drive and Northside Drive. The footprint has increased over time (now up to 25 feet).	(CTA) Remove roadside parking along Cook's meadow and restore to meadow conditions.	(CTA) Remove roadside parking along Cook's meadow and restore to meadow conditions.	(CTA) Remove roadside parking along Cook's meadow and restore to meadow conditions.	(CTA) Remove roadside parking along Cook's meadow and restore to meadow conditions.	(CTA) Remove roadside parking along Cook's meadow and restore to meadow conditions.
RES-2-013	2	Leidig Meadow: Informal trailing	Informal trailing in Leidig meadow is extensive and highly fragments the meadow. The area surrounding the north side of swinging has a high density of Informal trails.	Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.	Informal trailing in Leidig meadow is extensive causing high levels of fragmentation. The area surrounding the north side of Swinging Bridge has a high density of informal trails.	(CTA) Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.	(CTA) Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.	(CTA) Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.	(CTA) Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.	(CTA) Remove informal trails that incise meadow, and areas of wet and/or sensitive vegetation which fragment meadow habitat. Restore native meadow vegetation.
RES-2-014	2	Eagle Creek/Rocky Point Sewage Plant: abandoned infrastructure	Lasting impacts from the former Eagle Creek/Rocky Point sewage plant are still evident today. Infrastructure remains underground that affects meadow hydrology including pipes that dewater the meadow.	Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.	The Eagle Creek/Rocky Point sewage plant infrastructure remains underground within Eagle Creek meadow.	(CTA) Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.	(CTA) Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.	(CTA) Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.	(CTA) Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.	(CTA) Remove abandoned infrastructure from vicinity of Eagle Creek Meadow and restore 3.5 acres of meadow habitat.
RES-2-015	2	Leidig Meadow: Bike Path	The bike path through Leidig Meadow runs within the bed and banks and is inundated during the spring high water.	Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.	The bike path through Leidig Meadow runs within the bed and banks and is inundated during the spring high water.	(CTA) Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.	(CTA) Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.	(CTA) Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.	(CTA) Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.	(CTA) Replace a section of paved trail within the bed and banks of the river with an elevated boardwalk.
RES-2-016	2	Royal Arches Meadow: abandoned infrastructure	Royal Arches Meadow contains tiles and pipes that cause meadow dewatering. A former road bed remains between the meadow and Tenaya Creek, impacting hydrology and vegetation; the adjacent riparian area contains thick conifer sapling cover.	Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.	Royal Arches Meadow contains tiles and pipes. A former road bed remains between the meadow and Tenaya Creek; conifer saplings encroach into the adjacent riparian area.	(CTA) Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.	(CTA) Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.	(CTA) Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.	(CTA) Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.	(CTA) Remove tiles, pipes and abandoned road. Decompact soils, remove conifers and revegetate with riparian species.
RES-2-017	2	Road improvements in meadows	Due to the presence of roads in meadows, large portions of the floodplain become disconnected from the river, disrupting the ecological function of the meadows.	Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.	Due to the presence of Southside Drive, a large portion of the floodplain in Sentinel Meadow is disconnected from the river.	(CTA) Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.	(CTA) Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.	(CTA) Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.	(CTA) Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.	(CTA) Road improvements over meadows will maintain formalized shoulder parking and use wide box culverts or other design components such as rolling dips, permeable subgrade, etc to improve surface water flow.
RES-2-018	2	Sentinel Meadow: Trampling	The current boardwalk fails to address adequately address use in Sentinel Meadow, resulting in substantial meadow trampling and soil compaction.	Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.	A portion of Sentinel Meadow has substantial meadow trampling and soil compaction from visitor use.	(CTA) Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.	(CTA) Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.	(CTA) Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.	(CTA) Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.	(CTA) Add 150 feet of boardwalk to the west of the existing boardwalk in order to accommodate visitors and reduce meadow trampling.

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RES-2-019	2	Western portion of Former Lower Pines Campground loop: abandoned infrastructure	Closed portion of Lower Pines campground, historically a floodplain/meadow/riparian complex, has retained impacts of development including compacted soils, fill material over native soils, and invasive plant infestations.	Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.	The closed portion of Lower Pines campground, once a floodplain, meadow, and riparian complex, has not been restored since the campsites were removed after the 1997 flood. The area has compacted soils, fill material over native soils, and invasive plant infestations.	(CTA) Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.	(CTA) Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.	(CTA) Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.	(CTA) Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.	(CTA) Restore 20 acres of floodplains at the portion of Lower Pines campground that was closed after the flood.
RES-2-020	2	Devil's Elbow: riverbank erosion	Visitor use impacts are causing river bank erosion and loss of riparian vegetation in localized areas such as El Capitan Bridge and Devil's Elbow. There are also safety concerns with the pedestrian crossings here.	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 trail and restore to meadow conditions (designated with river access signs).	Visitor use between El Capitan Bridge and Devil's Elbow exceeds the design of the existing infrastructure. Visitors park on the north side of the road creating safety issues on a tight corner, accessing the river in sensitive areas.	(CTA) 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 trail and restore to meadow conditions (designated with river access signs).	(CTA) 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 trail and restore to meadow conditions (designated with river access signs).	(CTA) 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 trail and restore to meadow conditions (designated with river access signs).	(CTA) 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 trail and restore to meadow conditions (designated with river access signs).	(CTA) 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 trail and restore to meadow conditions (designated with river access signs).
RES-2-021	2	Former Upper River / Lower River Campground: localized riparian and floodplain impacts	This area is critical to providing hydrologic connectivity between Ahwahnee and Stoneman meadows; however, it is currently not functioning as a healthy riparian and floodplain ecosystem due to lost topography (graded landscape and filled drainages), compacted soils, existing (amphitheater) and abandoned infrastructure, and invasive plant infestations.		This area is critical to the hydrologic connectivity between Ahwahnee and Stoneman meadows. It is not functioning as a healthy riparian and floodplain ecosystem due to lost topography (graded landscape and filled drainages), compacted soils, existing (amphitheater) and abandoned infrastructure, and invasive plant infestations.	Restore 35.6 acres of 10-year floodplain. Remove remaining asphalt, decompact soils of former roads and campsites and re-establish seasonal channels and natural topography that have been filled. Remove Lower River amphitheater structure and fill. Temporarily fence restoration areas to allow for recovery.	Restore 35.6 acres of 10-year floodplain. Remove remaining asphalt, decompact soils of former roads and campsites and re-establish seasonal channels and natural topography that have been filled. Remove Lower River amphitheater structure and fill. Temporarily fence restoration areas to allow for recovery.	Restore topography of 19.7 acres of floodplain. Remove remaining asphalt, decompact soils of 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.	Restore 35.6 acres of 10-year floodplain. Remove remaining asphalt, decompact soils of former roads and campsites and re-establish seasonal channels and natural topography that have been filled. Remove Lower River amphitheater structure and fill. Temporarily fence restoration areas to allow for recovery.	Restore topography of 19.7 acres of floodplain. Remove remaining asphalt, decompact soils of 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.
RES-2-022	2	Valley Campgrounds: campsites near the river	The close proximity of campsites to the river and high visitor use has resulted in vegetation trampling and riverbank erosion, impacting both water quality and riparian habitat. This proximity precludes riparian vegetation development.	Remove all campsites within 100' of the bed and banks. Remove asphalt parking spaces, base rock, fill material; decompact soils, recontour and revegetate. Re-direct use to more stable and resilient areas. Erect new fencing or adjust existing fencing to protect the riparian zone.	The close proximity of campsites to the river and high visitor use has resulted in vegetation trampling and riverbank erosion, impacting both water quality and riparian habitat.	Remove all campsites and infrastructure at and all sites within the 100-year floodplain and restore 25.1 acres of floodplain and riparian habitat.	Remove all campsites and infrastructure within 150-foot buffer of the river. Restore 12 acres of riparian habitat. Designate river access point at North Pines campground.	Remove all campsites and infrastructure within 150-foot buffer of the river. Restore 12 acres of riparian habitat. Designate river access point at North Pines campground.	Remove all campsites and infrastructure within 100-foot buffer of the river. Restore 6.5 acres of riparian habitat. Designate river access point at North Pines campground.	Remove all campsites and infrastructure within 100-foot buffer of the river. Restore 6.5 acres of riparian habitat. Designate river access point at North Pines campground.
RES-2-023	2	Housekeeping Camp: riparian restoration and river access	Several Housekeeping Camp units are located in the 2- to 10-year floodplains, impeding hydrologic function. Additionally, high visitor use at the camp has resulted in vegetation trampling and riverbank erosion, impacting both water quality and riparian vegetation. Excess erosion is caused by high flows over parking areas, around tent cabins and down roadways and foot trails.	Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.	There are currently 266 units at Housekeeping Camp and are protected by riverbank revetment. Many Housekeeping Camp units are located in the 2- to 10-year floodplain. High visitor use and the close proximity of these units to the riverbank and riparian zone results in denuded riverbanks.	Remove all lodging units and riprap at Housekeeping Camp from within the 100-year floodplain. Restore 16.8 acres of floodplain and riparian ecosystem to natural conditions. Convert area to day use river access (raft put-in) and picnicking. (CTA) Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.	Remove all lodging units and riprap at Housekeeping Camp from within the 100-year floodplain. Restore 16.8 acres of floodplain and riparian ecosystem to natural conditions. Convert area to day use river access (raft put-in) and picnicking. (CTA) Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.	Remove 166 lodging units to restore 10.6 acres of riparian zone. Provide for day use arriving via shuttle. (CTA) Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.	Remove 34 lodging units to restore 1 acre of riparian zone. Provide for day use arriving via shuttle. (CTA) Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.	Remove 34 lodging units to restore 1 acre of riparian zone. Provide for day use arriving via shuttle. (CTA) Focus visitor use and river access to the two resilient beach locations on the western edge of Housekeeping Camp and across the footbridge. Fence off current eastern river access point located on a steep eroded bank, and actively restore riverbank with brush layering. Where infrastructure is removed, decompact soils and plant riparian species.

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RES-2-024	2	Yosemite Lodge: buildings in the 100-year floodplain	Several buildings in the Yosemite Lodge complex are within the 100-year floodplain. Buildings in this floodplain have the potential to be flooded.		Several buildings in the Yosemite Lodge complex are within the 100-year floodplain.	Remove buildings, decompact soils, recontour topography (using 1919 maps as a guide) and plant native vegetation.	Remove 4 buildings from the 100-year floodplain, in addition to those identified as common to all.	No buildings removed from the 100-year floodplain, except for those identified as common to all.	No buildings removed from the 100-year floodplain, except for those identified as common to all.	Remove buildings, decompact soils, in addition to those identified as common to all; recontour topography (using 1919 maps as a guide) and plant native vegetation. Construct enough parking for the lodging units and restore the remaining area.
RES-2-025	2	Eagle Creek drainage: channelization	Eagle Creek's natural braided morphology has been channelized, affecting the delivery of water to the meadow. A berm has been constructed to protect a parking pull-out from creek flooding.	Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.	The natural braided morphology of Eagle Creek is channelized near Northside Drive. A berm was constructed to protect a parking pull-out from creek flooding.	(CTA) Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.	(CTA) Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.	(CTA) Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.	(CTA) Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.	(CTA) Remove berm and parking lot abutting Eagle Creek. Add culverts to allow more dispersed water delivery to the Eagle Creek Meadow. Revegetate with native upland species.
RES-2-026	2	El Capitan Bridge: River access	High visitor use along sensitive riverbanks near the El Capitan Bridge leads to vegetation trampling and riverbank erosion.	Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.	There is high visitor use along sensitive riverbanks near the El Capitan Bridge.	(CTA) Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.	(CTA) Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.	(CTA) Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.	(CTA) Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.	(CTA) Redirect visitors accessing the river near El Capitan Bridge to resilient sandbar points. Fence and revegetate eroded areas.
RES-2-027	2	Valley Swinging Bridge Picnic Area: Effects on Riparian Zone and Visitor Experience	The Swinging Bridge picnic area is negatively affected by high visitor use, exceeding the design of the existing infrastructure. Vegetation trampling and soil compaction has resulted in riparian vegetation loss, river bank erosion, and loss of vegetative cover throughout the picnic area.	Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.	The Swinging Bridge picnic area sustains high levels of visitor use, exceeding the design of the existing infrastructure. Vegetation trampling and soil compaction has resulted in riparian vegetation loss, river bank erosion, and loss of vegetative cover throughout the picnic area.	(CTA) Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.	(CTA) Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.	(CTA) Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.	(CTA) Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.	(CTA) Delineate picnic area by fencing and revegetating the river terrace along the riparian zone approximately 50 feet from the ordinary high water mark. Use fencing to re-direct use across the bridge to the large sandbar on the north and downstream side of Swinging Bridge and designate the area as the river access point. Remove riprap and use bioengineering techniques to rebuild riverbank. Reestablish riparian vegetation.
RES-2-028	2	Valley Campgrounds: river access	Campers are accessing areas along the river that are not good river access points. They are not hardened, and the banks are composed of erosive soils with unconsolidated materials. Trees are undercut by trampling around the roots, causing subsequent channel widening due to trees falling into the river.	Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.	Campers are accessing areas along the river that are not good river access points. They are not hardened, and the banks are composed of erosive soils with unconsolidated materials. Trees are undercut by trampling around the roots, then fall into the river, and the river channel is subsequently widened.	(CTA) Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.	(CTA) Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.	(CTA) Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.	(CTA) Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.	(CTA) Direct visitors of 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. Fence off vulnerable steep slope and provide signs directing visitors to current access.
RES-2-029	2	Valley Loop Trail: delineation and river access	The Valley Loop Trail is not well delineated, connected or signed. It is hard to find and does not provide explicit river access. Additionally, it is seasonally inaccessible at tributary crossings.	Reconstruct trail and designate river access, such as at 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 ends.	The Valley Loop Trail is not well delineated or signed. It is hard to locate the trail, and the most appropriate river access points are not demarcated. The trail is inaccessible at tributary crossings during periods of high water.	(CTA) Reconstruct trail and designate river access, such as at 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 ends.	(CTA) Reconstruct trail and designate river access, such as at 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 ends.	(CTA) Reconstruct trail and designate river access, such as at 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 ends.	(CTA) Reconstruct trail and designate river access, such as at 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 ends.	(CTA) Reconstruct trail and designate river access, such as at 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 ends.
RES-2-030	2	Yosemite Lodge: former lodge cabin area and volunteer center abandoned infrastructure	Removal of the former Yosemite Lodge cabin after the 1997 flood has left the area with fill and impacts from soil compaction.	Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.	Removal of the former Yosemite Lodge units and cabins and wellness center, after the 1997 flood, has left the area with fill and impacts from soil compaction.	(CTA) Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.	(CTA) Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.	(CTA) Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.	(CTA) Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.	(CTA) Restore 4.5 acres of riparian ecosystem at the site of the former Yosemite Lodge units and cabins and wellness center, from the western portion of the Lodge complex (those that were lost after the 1997 flood). Remove fill, decompact soils and plant riparian plant species.

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RES-2-031	2	Sentinel Beach Picnic Area: Effects on Riparian Zone and Visitor Experience	The Sentinel Beach picnic area is negatively affected by high visitor use, exceeding the design of the existing infrastructure. The resulting loss of riparian vegetation contributes to riverbank erosion.	Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.	The Sentinel Beach Designated Picnic Area is negatively affected by high visitor use, exceeding the design of the existing infrastructure. The resulting loss of riparian vegetation contributes to riverbank erosion.	(CTA) Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.	(CTA) Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.	(CTA) Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.	(CTA) Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.	(CTA) Redesign the picnic area in its current location to accommodate picnicking; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and reestablish riparian vegetation.
RES-2-032	2	CA-MRP-0046/47/74	Stock trail through sensitive midden deposit and formal hiking trail near a rock art feature impact sensitive cultural resources on archeological site CA-MRP-0046/47/74, located along the Happy Isles Loop Road. Modern graffiti desecrates the rock art boulder.	Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.	Stock trail through sensitive midden deposit and formal hiking trail near a rock art feature impact sensitive cultural resources on archeological site CA-MRP-0046/47/74, located along the Happy Isles Loop Road. Modern graffiti desecrates the rock art boulder.	(CTA) Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.	(CTA) Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.	(CTA) Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.	(CTA) Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.	(CTA) Re-route stock trail and formal trail off sensitive area, remove graffiti from rock art boulder.
RES-2-033	2	CA-MRP-0052/H	Stock use and operational staging cause impacts to archeological resources at site CA-MRP-0052/H northeast of the Ahwahnee.	Delineate or reroute bridle path away from site.	Stock use and operational staging cause impacts to archeological resources at site CA-MRP-0052/H northeast of the Ahwahnee.	(CTA) Delineate or reroute bridle path away from site.	(CTA) Delineate or reroute bridle path away from site.	(CTA) Delineate or reroute bridle path away from site.	(CTA) Delineate or reroute bridle path away from site.	(CTA) Delineate or reroute bridle path away from site.
RES-2-034	2	CA-MRP-0055/H	Exceptional site contains rock art and rock shelter features and is currently in good condition. Valley rock shelters attract potential illegal camping/bivy and rock art may be subject to vandalism. Informal trail from highway pullout into site center.	Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.	Exceptional site contains rock art and rock shelter features and is currently in good condition. Valley rock shelters attract potential illegal camping/bivy and rock art may be subject to vandalism. Informal trail from highway pullout into site center.	(CTA) Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.	(CTA) Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.	(CTA) Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.	(CTA) Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.	(CTA) Rehabilitate informal trails and remove parking pullout. Increase LE/archeology monitoring to protect rock shelter/rock art.
RES-2-036	2	CA-MRP-0057	Heavily used formal trails and informal trails, as well as illegal campfires, graffiti, and trampling cause impacts to the prehistoric rock shelter and associated artifacts at archeological site CA-MRP-0057 along the Mirror Lake Trail.	Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.	Heavily used formal trails and informal trails, as well as illegal campfires, graffiti, and trampling cause impacts to the prehistoric rock shelter and associated artifacts at archeological site CA-MRP-0057 along the Mirror Lake Trail.	(CTA) Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.	(CTA) Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.	(CTA) Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.	(CTA) Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.	(CTA) Remove graffiti in rock shelter, rehab informal trails. Increase law enforcement/ranger monitoring of rock shelter.
RES-2-037	2	CA-MRP-0062	Parking, rock climbing, camping, vandalism, human waste, fire rings and informal trails are impacting a prehistoric rock shelter and associated artifacts at site CA-MRP-0062 near Devil's Elbow.	Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.	Parking, rock climbing, camping, vandalism, human waste, fire rings and informal trails are impacting a prehistoric rock shelter and associated artifacts at site CA-MRP-0062 near Devil's Elbow.	(CTA) Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.	(CTA) Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.	(CTA) Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.	(CTA) Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.	(CTA) Remove the logs and graffiti. Ecologically restore the informal trails and relocate the parking area east, away from the site.
RES-2-038	2	CA-MRP-0076	Site recording not to current standards. Impacts: informal trails, climbing on Feature 2 (Taft Toe bouldering area). Midden, lithics not relocated since original recording, probably because of heavy surface impacts.	Rehabilitate social trails and prohibit climbing on Feature 2.	Site recording not to current standards. Impacts: informal trails, climbing on Feature 2 (Taft Toe bouldering area). Midden, lithics not relocated since original recording, probably because of heavy surface impacts.	(CTA) Rehabilitate social trails and prohibit climbing on Feature 2.	(CTA) Rehabilitate social trails and prohibit climbing on Feature 2.	(CTA) Rehabilitate social trails and prohibit climbing on Feature 2.	(CTA) Rehabilitate social trails and prohibit climbing on Feature 2.	(CTA) Rehabilitate social trails and prohibit climbing on Feature 2.
RES-2-039	2	CA-MRP-0080	Camping, trampling, and trash are causing impacts to bedrock mortars (pounding rocks) at site CA-MRP-0080 in the 200 Loop of Upper Pines Campground. Impacts to these important archeological features affects continuing use and association with these culturally significant resources.	Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.	Camping, trampling, and trash are causing impacts to bedrock mortars (pounding rocks) at site CA-MRP-0080 in the 200 Loop of Upper Pines Campground. Impacts to these important archeological features affects continuing use and association with these culturally significant resources.	(CTA) Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.	(CTA) Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.	(CTA) Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.	(CTA) Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.	(CTA) Remove campsite 208 and bear box; reroute bathroom foot traffic away from milling feature and fence off.

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RES-2-040	2	CA-MRP-0082/H	Rock climbing activities (“bolt ladder”) in the rock shelter boulder at Le Conte Memorial Lodge cause trampling of the near surface archeological deposit at CA-MRP-0082/H.	Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.	Rock climbing activities (“bolt ladder”) in the rock shelter boulder at Le Conte Memorial Lodge cause trampling of the near surface archeological deposit at CA-MRP-0082/H.	(CTA) Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.	(CTA) Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.	(CTA) Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.	(CTA) Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.	(CTA) Remove climbing bolts from rock shelter boulder. Increase interpretation/education/outreach effort for climbers. Prohibit climbing at the Rock Shelter Boulder.
RES-2-041	2	CA-MRP-0158/309	Rock climbing (bouldering) activities on a rock art boulder and informal trails impact the archeological and ethnographic resources at CA-MRP-0158/309 located along the Northside Drive stretch of the Yosemite Valley Loop Trail.	Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.	Rock climbing (bouldering) activities on a rock art boulder and informal trails impact the archeological and ethnographic resources at CA-MRP-0158/309 located along the Northside Drive stretch of the Yosemite Valley Loop Trail.	(CTA) Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.	(CTA) Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.	(CTA) Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.	(CTA) Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.	(CTA) Rehabilitate informal trails and prohibit climbing on rock art boulder. Increase interpretation/education/outreach effort for climbers.
RES-2-042	2	CA-MRP-0190/191	Vehicular and bike traffic along a dirt access road in Backpackers Campground affects surface and subsurface archeological resources at CA-MRP-0190/0191.	Delineate trail/bike path to limit shoulder access within site.	Vehicular and bike traffic along a dirt access road in Backpackers Campground affects surface and subsurface archeological resources at CA-MRP-0190/0191.	(CTA) Delineate trail/bike path to limit shoulder access within site.	(CTA) Delineate trail/bike path to limit shoulder access within site.	(CTA) Delineate trail/bike path to limit shoulder access within site.	(CTA) Delineate trail/bike path to limit shoulder access within site.	(CTA) Delineate trail/bike path to limit shoulder access within site.
RES-2-043	2	CA-MRP-0240/303/H	Non-technical climbing on a large bedrock mortar (pounding rock) at Lower Yosemite Falls causes impacts to the archeological resource at site CA-MRP-0240/0303/H. This type of visitor use on the bedrock mortar affects continuing use and association with these culturally significant resources.	Fence off/close access to large bedrock mortar (pounding rock) next to trail.	Non-technical climbing on a large bedrock mortar (pounding rock) at Lower Yosemite Falls causes impacts to the archeological resource at site CA-MRP-0240/0303/H. This type of visitor use on the bedrock mortar affects continuing use and association with these culturally significant resources.	(CTA) Fence off/close access to large bedrock mortar (pounding rock) next to trail.	(CTA) Fence off/close access to large bedrock mortar (pounding rock) next to trail.	(CTA) Fence off/close access to large bedrock mortar (pounding rock) next to trail.	(CTA) Fence off/close access to large bedrock mortar (pounding rock) next to trail.	(CTA) Fence off/close access to large bedrock mortar (pounding rock) next to trail.
RES-2-045	2	Ethnographic ORV - Impacts to traditionally used plant populations	Threats to traditionally used plant populations include invasive species such as Himalayan Blackberry (Rubus discolor), drainage and hydrology impacts to meadows, encroachment of conifers in black oak habitat, and erosion and revetments that affect riparian vegetation.	The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.	Threats to traditionally used plant populations include invasive species such as Himalayan Blackberry (Rubus discolor), drainage and hydrology impacts to meadows, and erosion and revetments that affect riparian vegetation.	(CTA) The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.	(CTA) The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.	(CTA) The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.	(CTA) The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.	(CTA) The ecological restoration actions associated with this planning effort implemented in concert with the existing invasive plant management program will address impacts to some traditionally used plant populations in some locations. Conifers that are overtopping black oaks would also be considered for removal.
RES-2-049	2	CA-MRP-0181/H	Abandoned infrastructure located on CA-MRP-0181/H in Rancheria impact an exceptional site containing diverse components and extremely sensitive cultural materials that are highly valued by traditionally associated American Indians.	In recognition of the high cultural significance of CA-MRP-0181/H 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.	Abandoned infrastructure located on CA-MRP-0181/H in Rancheria impact an exceptional site containing diverse components and extremely sensitive cultural materials that are highly valued by traditionally associated American Indians.	(CTA) In recognition of the high cultural significance of CA-MRP-0181/H 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.	(CTA) In recognition of the high cultural significance of CA-MRP-0181/H 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.	(CTA) In recognition of the high cultural significance of CA-MRP-0181/H 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.	(CTA) In recognition of the high cultural significance of CA-MRP-0181/H 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.	(CTA) In recognition of the high cultural significance of CA-MRP-0181/H 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.
RES-2-050	2	Former Bridalveil Sewer Plant	Lasting impacts from the former Bridalveil sewer plant are still evident. Remaining underground infrastructure affects hydrology and fill material precludes recruitment of desirable native plants in black oak community, affecting the ethnographic ORV.	Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.	Impacts from the former Bridalveil sewer plant are still evident in Bridalveil Meadow.	(CTA) Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.	(CTA) Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.	(CTA) Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.	(CTA) Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.	(CTA) Remove the buried structure, including piping on both sides of the river, and add fill if needed. Cover with native topsoil and revegetate with native plants.

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RES-2-052	2	Sugar Pine Bridge and Ahwahnee Bridge and Road Berm: free flowing condition	The historic Sugar Pine Bridge is constricting the free-flowing condition of the Merced River and causing localized impacts to hydrologic function. The Ahwahnee Bridge is also constricting river flow.		The historic Sugar Pine and Ahwahnee bridges and the road berm that connects them are hydrologically constricting the Merced River.	Remove the Ahwahnee and Sugar Pine bridges, and the associated berm and restore to natural conditions. Re-route the multiple use trail to the north bank of the river. Reroute utilities under Ahwahnee Bridge. Manually cut pieces of the bridge into smaller sections. Remove bridges with heavy equipment (crane lifts sections or chunks). Pontoon rafts below the bridge would catch debris. All work from the banks would use a reach an excavator to remove chunks of bridge. Footings were removed with excavators from the bank. The removal would occur during low flow in late Summer or early Fall (no work after Oct. 31 due to the potential for high water events occurring).	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. Reroute utilities under Ahwahnee Bridge. Manually cut pieces of the bridge into smaller sections. Remove bridges with heavy equipment (crane lifts sections or chunks). Pontoon rafts below the bridge would catch debris. All work from the banks would use a reach an excavator to remove chunks of bridge. Footings were removed with excavators from the bank. The removal would occur during low flow in late Summer or early Fall (no work after Oct. 31 due to the potential for high water events occurring).	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. Reroute utilities under Ahwahnee Bridge. Manually cut pieces of the bridge into smaller sections. Remove bridges with heavy equipment (crane lifts sections or chunks). Pontoon rafts below the bridge would catch debris. All work from the banks would use a reach an excavator to remove chunks of bridge. Footings were removed with excavators from the bank. The removal would occur during low flow in late Summer or early Fall (no work after Oct. 31 due to the potential for high water events occurring).	Remove the Sugar Pine Bridge and berm. At the Ahwahnee Bridge, heading south toward the Lower Pines campground, connect a trail and small bridge going over the cut-off channel. Additionally, re-route the multiple use trail to the north bank of the river. Manually cut pieces of the bridge into smaller sections. Remove bridges with heavy equipment (crane lifts sections or chunks). Pontoon rafts below the bridge would catch debris. All work from the banks would use a reach an excavator to remove chunks of bridge. Footings were removed with excavators from the bank. The removal would occur during low flow in late Summer or early Fall (no work after Oct. 31 due to the potential for high water events occurring).the river, going towards Mirror Lake.	Retain all historic bridges. Improve riverbank condition at Sugar Pine and Ahwahnee Bridges by increasing channel complexity through construction of constructed log jams, strategic placement of large wood, removal of rip rap, and bioengineering of the riverbank. 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. If subsequent monitoring of riparian condition reveals insufficient improvement (i.e. CRAM rating remains below 0.71) within 10 years of the implementation of these actions, more aggressive management action may be initiated, including the possible removal of Sugar Pine Bridge.
RES-2-053	2	Stoneman Bridge: free flowing condition	The historic Stoneman Bridge is impacting the free flowing condition of the Merced River by constricting flow within the bed and banks.		The historic Stoneman Bridge has footings within the bed and banks of the Merced River and is hydrologically constricting the river.	Remove bridge and restore to natural conditions, make Southside Drive two-way, and redesign Sentinel intersection.	Remove bridge and restore to natural conditions, make Southside Drive two-way, and redesign Sentinel intersection.	Mitigate effects of bridge through constructed solutions. Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam. Add culverts along Northside Drive to improve drainage.	Mitigate effects of bridge through constructed solutions. Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam. Add culverts along Northside Drive to improve drainage.	Mitigate effects of bridge through constructed solutions. Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam. Add culverts along Northside Drive to improve drainage.
RES-2-054	2	Clark's Bridge: free flowing condition	Clark's Bridge is impacting the free flowing condition of the Merced River by constricting flow within the bed and banks.	Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	The Clark's Bridge constricts hydrologic flows of the Merced River.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.
RES-2-056	2	Happy Isles former footbridge footings: free flowing condition	The former footbridge restricts free-flowing condition due to the presence of abutments and gage base in the river.	Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.	Abutments and gage base of the former footbridge are located within in the bed and banks of the Merced River.	(CTA) Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.	(CTA) Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.	(CTA) Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.	(CTA) Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.	(CTA) Remove former footings and the former river gauge base from the bed and banks of the river. Revegetate denuded informal trails.
RES-2-057	2	Pohono Bridge: abandoned gauging station	The antiquated gauging station infrastructure within the bed and banks of the river is unnecessary with current technology and can be removed.	Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.	There is unused and antiquated infrastructure associated with the gauge station within the bed and banks of the river.	(CTA) Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.	(CTA) Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.	(CTA) Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.	(CTA) Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.	(CTA) Move the gauging station north of the river outside of the bed and banks of the river. Revegetate denuded areas.
RES-2-058	2	Road bridge at Happy Isles: free flowing condition	The road bridge at Happy Isles has footings within the bed and banks of the Merced River, which serve as an impediment to hydrologic flows.	Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	The road bridge at Happy Isles has footings within the bed and banks of the Merced River, which serve as an impediment to hydrologic flows.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.
RES-2-059	2	Sentinel Bridge: free flowing condition	Sentinel Bridge is impacting the free flowing condition of the Merced River by constricting flow within the bed and banks.	Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	Sentinel Bridge constricts hydrologic flows of the Merced River.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.	(CTA) Place large wood to lessen the scouring from the bridge. Use brush layering and place an constructed log jam.
RES-2-060	2	Valley Swinging Bridge: free flowing condition	Swinging Bridge and associated revetments impact the free-flowing condition of the Merced River.	Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.	The bridge has footings in the bed and banks of the river, which serve as an impediment to hydrologic flows.	(CTA) Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.	(CTA) Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.	(CTA) Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.	(CTA) Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.	(CTA) Redesign the picnic area in its current location to better accommodate visitor use levels at this picnic area; formalize vehicle access and parking; designate formal river access. Fence off sensitive areas, re-direct use to more resilient areas and re-establish riparian vegetation.

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RES-2-061	2	Sentinel Beach Picnic Area to El Capitan Moraine: Channel complexity	Loss of the El Capitan moraine as well as resulting channel incision upstream has reduced frequency of inundation within the riparian zone, meadows and floodplain. This results in decreased topographic complexity and poorly developed riparian vegetation.	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.	The river reach upstream of the El Capitan moraine to the Sentinel picnic area lacks channel complexity and large wood.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.
RES-2-062	2	River reach between Clark's and Sentinel Bridges: highly impacted riverbanks	Between Clark's and Sentinel Bridges, the river lacks complexity and is impacted. In some places along this reach, it is more than twice its historic width and shallower than historically.	Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.	Between Clark's and Sentinel Bridges, the river channel lacks complexity, and is shallow and wide.	(CTA) Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.	(CTA) Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.	(CTA) Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.	(CTA) Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.	(CTA) Place eight constructed log jams in the channel between Clark's and Sentinel Bridges to address river widening and low channel complexity. Log jams would be designed to look natural, without straight-cut edges and with root wads remaining. Incorporate brush-layering and re-vegetation to repair localized riverbank erosion.
RES-2-063	2	Clark's Bridge to El Cap Bridge: large wood management	Long-term removal of large wood from the river between Clark's Bridge to El Cap Bridge has reduced channel complexity and compromised riparian structure and aquatic habitat.	Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.	Large woody debris (LWD) has been removed from the river between Clark's Bridge to El Cap Bridge for decades.	(CTA) Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.	(CTA) Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.	(CTA) Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.	(CTA) Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.	(CTA) Manage large wood according to the 2012 "Management of Fallen Trees in the Merced River in Yosemite Valley" policy. Trees that fall into the river will be retained in the river. Large wood may be minimally manipulated to protect critical infrastructure, to ensure visitor safety, and to prevent unnatural accumulation of wood due to bridges.
RES-2-065	2	Pohono Bridge to the Big Oak Flat Road/El Portal Road intersection: river access and roadside parking	The segment of the El Portal Road between Pohono Bridge and the intersection of the Big Oak Flat Road has a number of non-delineated, dirt roadside pullouts. There are no designated river access points in this reach. Visitor use of these informal pull-outs along the river has resulted in substantial informal trailing, riverbank erosion and loss of riparian vegetation. Visitor experience and resource protection are not optimal for accessing the river in this area.	Pave and formalize 5 roadside pull-outs on El Portal Road. Install curbing in 4 pull-outs and along El Portal Road. Formalize river access in other sensitive areas. Decompact soil and revegetate with riparian species, including willow. Also, install drainage improvements and head walls at 12 locations.	The segment of the El Portal Road between Pohono Bridge and the intersection of the Big Oak Flat Road has a number of non-delineated, dirt roadside pull-outs. There are no designated river access points in this reach. Visitor use of these informal pull-outs along the river has resulted in substantial informal trailing, riverbank erosion and loss of riparian vegetation. Visitor experience and resource protection are not optimal for accessing the river in this area.	CTA: Pave and formalize 5 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 towards the river and associated resource damage . Completely remove one pull-out that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species, including willow. Install drainage improvements and head walls at 11 locations.	CTA: Pave and formalize 5 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 towards the river and associated resource damage . Completely remove one pull-out that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species, including willow. Install drainage improvements and head walls at 11 locations.	CTA: Pave and formalize 5 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 towards the river and associated resource damage . Completely remove one pull-out that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species, including willow. Install drainage improvements and head walls at 11 locations.	CTA: Pave and formalize 5 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 towards the river and associated resource damage . Completely remove one pull-out that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species, including willow. Install drainage improvements and head walls at 11 locations.	CTA: Pave and formalize 5 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 towards the river and associated resource damage . Completely remove one pull-out that is not protective of resources. In the areas that require ecological restoration following parking and river access formalization, decompact soil and revegetate with riparian species, including willow. Install drainage improvements and head walls at 11 locations.
RES-2-068	2	161; Ahwahnee Dining Room	Encroaching trees are filling in the area between the hotel dining room and village, affecting view toward Yosemite Falls.	Selectively clear foreground to maintain views from inside building	Encroaching trees are filling in the area between the hotel dining room and village, affecting view toward Yosemite Falls.	(CTA) Selectively clear foreground to maintain views from inside building	(CTA) Selectively clear foreground to maintain views from inside building	(CTA) Selectively clear foreground to maintain views from inside building	(CTA) Selectively clear foreground to maintain views from inside building	(CTA) Selectively clear foreground to maintain views from inside building
RES-2-069	2	159; Ahwahnee Lounge	Views from inside the building, out to the river corridor and across meadows, are subject to change from encroaching conifers.	Selectively thin conifers to maintain views from inside building	Views from inside the building, out to the river corridor and across meadows, are subject to change from encroaching conifers.	(CTA) Selectively thin conifers to maintain views from inside building	(CTA) Selectively thin conifers to maintain views from inside building	(CTA) Selectively thin conifers to maintain views from inside building	(CTA) Selectively thin conifers to maintain views from inside building	(CTA) Selectively thin conifers to maintain views from inside building

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RES-2-070	2	10; Ahwahnee Meadow, Northside Drive	Park visitors enjoy views toward Yosemite Falls, North Dome, Royal Arches, and Castle Cliffs. Fast-growing conifers are encroaching on existing meadows, obscuring views.	Remove encroaching conifers from oak woodland and meadow to open view of distant features	Park visitors enjoy views toward Yosemite Falls, North Dome, Royal Arches, and Castle Cliffs. Fast-growing conifers are encroaching on existing meadows, obscuring views.	(CTA) Remove encroaching conifers from oak woodland and meadow to open view of distant features	(CTA) Remove encroaching conifers from oak woodland and meadow to open view of distant features	(CTA) Remove encroaching conifers from oak woodland and meadow to open view of distant features	(CTA) Remove encroaching conifers from oak woodland and meadow to open view of distant features	(CTA) Remove encroaching conifers from oak woodland and meadow to open view of distant features
RES-2-071	2	227; Ahwahnee Meadow, Peeling Domes	Park visitors enjoy views toward Half Dome, Royal Arches, Glacier Point. Fast-growing conifers are encroaching on existing meadows, obscuring views.	Monitor conditions and maintain distant views	Park visitors enjoy views toward Half Dome, Royal Arches, Glacier Point. Fast-growing conifers are encroaching on existing meadows, obscuring views.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-072	2	160; Ahwahnee Solarium	Trees encroaching on the Ahwahnee Meadow are affecting views from the building's interior toward Glacier Point.	Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.	Trees encroaching on the Ahwahnee Meadow are affecting views from the building's interior toward Glacier Point.	(CTA) Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively thin conifers to maintain views from inside building. Leave oaks due to their protection as an ethnographic ORV.
RES-2-073	2	228; Ahwahnee Winter Club Room	Trees encroaching on open space outside the building are affecting middle ground views from the building's interior.	Monitor conditions and maintain distant views	Trees encroaching on open space outside the building are affecting middle ground views from the building's interior.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-075	2	37; Bridalveil Fall footbridge	Views of the fall are limited by encroachment of conifers upon the riparian corridor.	Selectively thin conifers to maintain nearby view	Views of the fall are limited by encroachment of conifers upon the riparian corridor.	(CTA) Selectively thin conifers to maintain nearby view	(CTA) Selectively thin conifers to maintain nearby view	(CTA) Selectively thin conifers to maintain nearby view	(CTA) Selectively thin conifers to maintain nearby view	(CTA) Selectively thin conifers to maintain nearby view
RES-2-076	2	34; Bridalveil Fall hanging valley	From a trail, visitors see Bridalveil Fall, El Capitan, Cathedral Rocks. Increasing densities of tree growth have changed these views over time.	Thin conifers to maintain nearby and distant views	From a trail, visitors see Bridalveil Fall, El Capitan, Cathedral Rocks. Increasing densities of tree growth have changed these views over time.	(CTA) Thin conifers to maintain nearby and distant views	(CTA) Thin conifers to maintain nearby and distant views	(CTA) Thin conifers to maintain nearby and distant views	(CTA) Thin conifers to maintain nearby and distant views	(CTA) Thin conifers to maintain nearby and distant views
RES-2-077	2	43; Bridalveil Meadow	Conifer growth is limiting the view of Ribbon Fall from a roadside stop on Southside Drive.	Selectively thin conifers to open view of Ribbon Fall	Conifer growth is limiting the view of Ribbon Fall from a roadside stop on Southside Drive.	(CTA) Selectively thin conifers to open view of Ribbon Fall	(CTA) Selectively thin conifers to open view of Ribbon Fall	(CTA) Selectively thin conifers to open view of Ribbon Fall	(CTA) Selectively thin conifers to open view of Ribbon Fall	(CTA) Selectively thin conifers to open view of Ribbon Fall
RES-2-078	2	38; Bridalveil Straight	Visitors enjoy views of Half Dome, Cathedral Rocks, El Capitan, and Ribbon Fall from the roadside. Foreground views are being disturbed by foot traffic through grasslands.	Restore grassland and oak habitat in foreground to view of El Capitan	Visitors enjoy views of Half Dome, Cathedral Rocks, El Capitan, and Ribbon Fall from the roadside. Foreground views are being disturbed by foot traffic through grasslands.	(CTA) Restore grassland and oak habitat in foreground to view of El Capitan	(CTA) Restore grassland and oak habitat in foreground to view of El Capitan	(CTA) Restore grassland and oak habitat in foreground to view of El Capitan	(CTA) Restore grassland and oak habitat in foreground to view of El Capitan	(CTA) Restore grassland and oak habitat in foreground to view of El Capitan
RES-2-079	2	40; Cathedral Beach El Cap	Existing picnic area at the river's edge provides a nearby view of El Capitan, threatened in the long term by increasing density of forest growth.	Selectively thin conifers to maintain views of El Capitan	Existing picnic area at the river's edge provides a nearby view of El Capitan, threatened in the long term by increasing density of forest growth.	(CTA) Selectively thin conifers to maintain views of El Capitan	(CTA) Selectively thin conifers to maintain views of El Capitan	(CTA) Selectively thin conifers to maintain views of El Capitan	(CTA) Selectively thin conifers to maintain views of El Capitan	(CTA) Selectively thin conifers to maintain views of El Capitan
RES-2-080	2	20; Chapel	Visitors see Yosemite Falls across Leidig Meadow, but the view is threatened in the long term by the encroachment of conifers.	Selectively thin conifers to open view of Lower Yosemite Fall	Visitors see Yosemite Falls across Leidig Meadow, but the view is threatened in the long term by the encroachment of conifers.	(CTA) Selectively thin conifers to open view of Lower Yosemite Fall	(CTA) Selectively thin conifers to open view of Lower Yosemite Fall	(CTA) Selectively thin conifers to open view of Lower Yosemite Fall	(CTA) Selectively thin conifers to open view of Lower Yosemite Fall	(CTA) Selectively thin conifers to open view of Lower Yosemite Fall
RES-2-081	2	11; Church Bowl picnic area	The site provides opportunities to view landmarks to the east, such as Half Dome, Starr King and Glacier Point across the Ahwahnee Meadow.	Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.	The site provides opportunities to view landmarks to the east, such as Half Dome, Starr King and Glacier Point across the Ahwahnee Meadow.	(CTA) Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.	(CTA) Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.	(CTA) Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.	(CTA) Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.	(CTA) Encroaching conifers impinge view of landmarks to the east, including Half Dome, Glacier Point, Starr King across the Ahwahnee Meadow.
RES-2-082	2	7; Clark's Bridge	The bridge provides downstream views for motorists and pedestrians. The river's edges have been affected by daily recreational use and erosion at North Pines and Lower Pines campgrounds.	Repair riverbank erosion and thin conifers to open view of Merced River and distant features.	The bridge provides downstream views for motorists and pedestrians. The river's edges have been affected by daily recreational use and erosion at North Pines and Lower Pines campgrounds.	(CTA) Repair riverbank erosion and thin conifers to open view of Merced River and distant features.	(CTA) Repair riverbank erosion and thin conifers to open view of Merced River and distant features.	(CTA) Repair riverbank erosion and thin conifers to open view of Merced River and distant features.	(CTA) Repair riverbank erosion and thin conifers to open view of Merced River and distant features.	(CTA) Repair riverbank erosion and thin conifers to open view of Merced River and distant features.
RES-2-083	2	2; Cooks Meadow, south boardwalk	Conifers are encroaching upon open vistas across the existing meadow and views of Yosemite Falls, Sentinel Rock, North Dome and Glacier Point.	Selectively remove encroaching conifers to maintain views of distant features	Conifers are encroaching upon open vistas across the existing meadow and views of Yosemite Falls, Sentinel Rock, North Dome and Glacier Point.	(CTA) Selectively remove encroaching conifers to maintain views of distant features	(CTA) Selectively remove encroaching conifers to maintain views of distant features	(CTA) Selectively remove encroaching conifers to maintain views of distant features	(CTA) Selectively remove encroaching conifers to maintain views of distant features	(CTA) Selectively remove encroaching conifers to maintain views of distant features

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RES-2-084	2	46; Curry amphitheater	From a gathering spot in the heart of the village, views of Half Dome, Royal Arches, Washington Column and Glacier Point are limited by conifer growth.	Selectively thin conifers to maintain distant views	From a gathering spot in the heart of the village, views of Half Dome, Royal Arches, Washington Column and Glacier Point are limited by conifer growth.	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views
RES-2-086	2	27; Curry Village Parking Area	Conifers growth has the potential to block views of Half Dome from the parking area.	Thin conifers to maintain views of Half Dome	Conifers growth has the potential to block views of Half Dome from the parking area.	(CTA) Thin conifers to maintain views of Half Dome	(CTA) Thin conifers to maintain views of Half Dome	(CTA) Thin conifers to maintain views of Half Dome	(CTA) Thin conifers to maintain views of Half Dome	(CTA) Thin conifers to maintain views of Half Dome
RES-2-087	2	41; Devil's Elbow	Views of Sentinel Rock, Three Brothers, El Capitan and Cathedral Rocks are being affected by conifer growth from a site where Northside Drive touches upon the edge of the river.	Selectively thin conifers to maintain nearby and distant views	Views of Sentinel Rock, Three Brothers, El Capitan and Cathedral Rocks are being affected by conifer growth from a site where Northside Drive touches upon the edge of the river.	(CTA) Selectively thin conifers to maintain nearby and distant views	(CTA) Selectively thin conifers to maintain nearby and distant views	(CTA) Selectively thin conifers to maintain nearby and distant views	(CTA) Selectively thin conifers to maintain nearby and distant views	(CTA) Selectively thin conifers to maintain nearby and distant views
RES-2-088	2	33; El Capitan Meadow, east end 1	Visitors take in views of the opposing monuments El Capitan and Cathedral Rocks, from the edges and center of the meadow.	Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan	Visitors take in views of the opposing monuments El Capitan and Cathedral Rocks, from the edges and center of the meadow.	(CTA) Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan	(CTA) Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan	(CTA) Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan	(CTA) Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan	(CTA) Address informal trails and trampling, selectively thin conifers to maintain nearby views of El Capitan
RES-2-090	2	21; El Capitan Postage Beach 1	From the edge of Northside Drive, historic views of El Capitan are getting blocked by conifers.	Remove invasive blackberry to maintain view of prominent features	From the edge of Northside Drive, historic views of El Capitan are getting blocked by conifers.	(CTA) Remove invasive blackberry to maintain view of prominent features	(CTA) Remove invasive blackberry to maintain view of prominent features	(CTA) Remove invasive blackberry to maintain view of prominent features	(CTA) Remove invasive blackberry to maintain view of prominent features	(CTA) Remove invasive blackberry to maintain view of prominent features
RES-2-091	2	3; El Capitan Postage Stamp Scene	From the edge of Southside Drive, historic views of El Capitan are getting blocked by conifers.	Remove conifers, thin alders to restore view of El Capitan	From the edge of Southside Drive, historic views of El Capitan are getting blocked by conifers.	(CTA) Remove conifers, thin alders to restore view of El Capitan	(CTA) Remove conifers, thin alders to restore view of El Capitan	(CTA) Remove conifers, thin alders to restore view of El Capitan	(CTA) Remove conifers, thin alders to restore view of El Capitan	(CTA) Remove conifers, thin alders to restore view of El Capitan
RES-2-092	2	44; Ferry Bend	Yosemite Falls are seen in the distance, over the river, but the view will be compromised as trees encroach.	Selectively thin conifers to maintain distant views	Yosemite Falls are seen in the distance, over the river, but the view will be compromised as trees encroach.	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views
RES-2-093	2	32; Four Mile Trailhead	From the roadside and trailhead, visitors look toward Yosemite Falls and Sentinel Rock. Tree growth has the potential to change these views over time.	Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	From the roadside and trailhead, visitors look toward Yosemite Falls and Sentinel Rock. Tree growth has the potential to change these views over time.	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls
RES-2-094	2	14; Happy Isles Bridge	At the trailhead of the Mist Trail, an important park attraction, foreground views of Glacier Point apron are limited by conifers.	Selectively thin conifers to maintain view of Glacier Point apron	At the trailhead of the Mist Trail, an important park attraction, foreground views of Glacier Point apron are limited by conifers.	(CTA) Selectively thin conifers to maintain view of Glacier Point apron	(CTA) Selectively thin conifers to maintain view of Glacier Point apron	(CTA) Selectively thin conifers to maintain view of Glacier Point apron	(CTA) Selectively thin conifers to maintain view of Glacier Point apron	(CTA) Selectively thin conifers to maintain view of Glacier Point apron
RES-2-096	2	26; Housekeeping Camp Beach	Conifer growth is encroaching on the riparian corridor, restricting views of Yosemite Falls, Glacier Point.	Thin conifers to maintain distant views	Conifer growth is encroaching on the riparian corridor, restricting views of Yosemite Falls, Glacier Point.	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views
RES-2-097	2	92; Housekeeping Camp bridge	Conifer growth is encroaching on the riparian corridor, restricting views of Yosemite Falls, Glacier Point.	Selectively thin trees to maintain views of Glacier Point and Yosemite Falls	Conifer growth is encroaching on the riparian corridor, restricting views of Yosemite Falls, Glacier Point.	(CTA) Selectively thin trees to maintain views of Glacier Point and Yosemite Falls	(CTA) Selectively thin trees to maintain views of Glacier Point and Yosemite Falls	(CTA) Selectively thin trees to maintain views of Glacier Point and Yosemite Falls	(CTA) Selectively thin trees to maintain views of Glacier Point and Yosemite Falls	(CTA) Selectively thin trees to maintain views of Glacier Point and Yosemite Falls
RES-2-098	2	17; Hutchings View A	Ongoing growth of conifers impinges on views of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Glacier Point, Royal Arches, Washington Column, which visitors appreciate from roadside and trails.	Selectively thin conifers to maintain distant views	Ongoing growth of conifers impinges on views of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Glacier Point, Royal Arches, Washington Column, which visitors appreciate from roadside and trails.	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views
RES-2-099	2	158; Hutchings View B	Distant views of Half Dome will gradually be compromised by conifer growth.	Selectively thin conifers to maintain views	Distant views of Half Dome will gradually be compromised by conifer growth.	(CTA) Selectively thin conifers to maintain views	(CTA) Selectively thin conifers to maintain views	(CTA) Selectively thin conifers to maintain views	(CTA) Selectively thin conifers to maintain views	(CTA) Selectively thin conifers to maintain views

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RES-2-100	2	30; Illilouette View	From a vista point on the John Muir Trail, hikers and backpackers can see Yosemite Falls, Glacier Point, Glacier Point Apron, Illilouette Fall, views that may be compromised by ongoing growth of conifers.	Selectively thin conifers to maintain distant views	From a vista point on the John Muir Trail, hikers and backpackers can see Yosemite Falls, Glacier Point, Glacier Point Apron, Illilouette Fall, views that may be compromised by ongoing growth of conifers.	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views	(CTA) Selectively thin conifers to maintain distant views
RES-2-102	2	31; Leidig Meadow, west end 1	The open meadow provides broad vistas of Half Dome, Yosemite Falls, Sentinel Rock, Three Brothers, North Dome, Cathedral Rocks, Royal Arches, Washington Column, and Clouds Rest, vistas that are threatened by non-native blackberry and encroaching conifers.	Remove manage encroaching conifers to maintain view of prominent features.	The open meadow provides broad vistas of Half Dome, Yosemite Falls, Sentinel Rock, Three Brothers, North Dome, Cathedral Rocks, Royal Arches, Washington Column, and Clouds Rest, vistas that are threatened by non-native blackberry and encroaching conifers.	(CTA) Remove manage encroaching conifers to maintain view of prominent features.	(CTA) Remove manage encroaching conifers to maintain view of prominent features.	(CTA) Remove manage encroaching conifers to maintain view of prominent features.	(CTA) Remove manage encroaching conifers to maintain view of prominent features.	(CTA) Remove manage encroaching conifers to maintain view of prominent features.
RES-2-104	2	48; Lower Falls bridge	Looking down Yosemite Creek, views across the Merced River to Sentinel Rock are compromised by increasing forest density.	Selectively thin conifers to maintain nearby view and view of Sentinel Rock	Looking down Yosemite Creek, views across the Merced River to Sentinel Rock are compromised by increasing forest density.	(CTA) Selectively thin conifers to maintain nearby view and view of Sentinel Rock	(CTA) Selectively thin conifers to maintain nearby view and view of Sentinel Rock	(CTA) Selectively thin conifers to maintain nearby view and view of Sentinel Rock	(CTA) Selectively thin conifers to maintain nearby view and view of Sentinel Rock	(CTA) Selectively thin conifers to maintain nearby view and view of Sentinel Rock
RES-2-115	2	22; Sentinel Beach	The existing picnic area offers upstream views of Yosemite Falls, North Dome, Clouds Rest, while some larger-scale riparian vegetation (alders and cottonwood) is encroaching.	Selectively thin deciduous trees to open distant views upriver	The existing picnic area offers upstream views of Yosemite Falls, North Dome, Clouds Rest, while some larger-scale riparian vegetation (alders and cottonwood) is encroaching.	(CTA) Selectively thin deciduous trees to open distant views upriver	(CTA) Selectively thin deciduous trees to open distant views upriver	(CTA) Selectively thin deciduous trees to open distant views upriver	(CTA) Selectively thin deciduous trees to open distant views upriver	(CTA) Selectively thin deciduous trees to open distant views upriver
RES-2-116	2	28; Sentinel Bridge	Views are provided across the Merced River toward Half Dome. Tree growth has the potential to change these views over time.	Maintain view of Half Dome by thinning conifers and burning undergrowth	Views are provided across the Merced River toward Half Dome. Tree growth has the potential to change these views over time.	(CTA) Maintain view of Half Dome by thinning conifers and burning undergrowth	(CTA) Maintain view of Half Dome by thinning conifers and burning undergrowth	(CTA) Maintain view of Half Dome by thinning conifers and burning undergrowth	(CTA) Maintain view of Half Dome by thinning conifers and burning undergrowth	(CTA) Maintain view of Half Dome by thinning conifers and burning undergrowth
RES-2-117	2	12; Sentinel Bridge parking area	Views across Cooks Meadow, toward Yosemite Falls, will become obscured or eliminated by encroaching conifers.	Remove encroaching conifers to open view of Yosemite Falls	Views across Cooks Meadow, toward Yosemite Falls, will become obscured or eliminated by encroaching conifers.	(CTA) Remove encroaching conifers to open view of Yosemite Falls	(CTA) Remove encroaching conifers to open view of Yosemite Falls	(CTA) Remove encroaching conifers to open view of Yosemite Falls	(CTA) Remove encroaching conifers to open view of Yosemite Falls	(CTA) Remove encroaching conifers to open view of Yosemite Falls
RES-2-118	2	24; Sentinel Meadow boardwalk	The boardwalk provides open vistas of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Royal Arches, Cathedral Rocks, Washington Column. These vistas can be limited by encroaching tree growth.	Monitor conditions and maintain distant views	The boardwalk provides open vistas of Half Dome, Yosemite Falls, Sentinel Rock, North Dome, Royal Arches, Cathedral Rocks, Washington Column. These vistas can be limited by encroaching tree growth.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-119	2	156; Southside Drive at Roosevelt turnout	Roadside views of El Capitan and Ribbon Fall are increasingly limited by increasing conifer forest density and encroachment on Bridalveil Meadow.	Monitor conditions and maintain nearby views	Roadside views of El Capitan and Ribbon Fall are increasingly limited by increasing conifer forest density and encroachment on Bridalveil Meadow.	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views
RES-2-120	2	152; Southside Drive, Bridalveil approach via Roosevelt turnout	Roadside views of El Capitan, Cathedral Rocks and Ribbon Fall are limited by conifer growth.	Monitor conditions and maintain nearby views	Roadside views of El Capitan, Cathedral Rocks and Ribbon Fall are limited by conifer growth.	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views	(CTA) Monitor conditions and maintain nearby views
RES-2-121	2	225; Southside Drive, Cathedral Spires turnout	View from Southside Drive may become limited by conifer growth at the roadside attraction site.	Monitor conditions and maintain distant views	View from Southside Drive may become limited by conifer growth at the roadside attraction site.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-122	2	25; Stoneman Bridge	Pedestrians and cyclists look north along the Merced River to views of Half Dome and east to North Dome and Glacier Point. The increasing density of tree growth has the potential to change these views over time.	Thin conifers to maintain distant views	Pedestrians and cyclists look north along the Merced River to views of Half Dome and east to North Dome and Glacier Point. The increasing density of tree growth has the potential to change these views over time.	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views	(CTA) Thin conifers to maintain distant views

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RES-2-123	2	6; Stoneman Meadow boardwalk	Visitors enjoy long views of Half Dome, North Dome, Glacier Point, Eagle Peak, Staircase Falls across the open meadow.	Remove conifers to maintain distant views	Visitors enjoy long views of Half Dome, North Dome, Glacier Point, Eagle Peak, Staircase Falls across the open meadow.	(CTA) Remove conifers to maintain distant views	(CTA) Remove conifers to maintain distant views	(CTA) Remove conifers to maintain distant views	(CTA) Remove conifers to maintain distant views	(CTA) Remove conifers to maintain distant views
RES-2-125	2	47; Superintendent's Bridge	Pedestrians can view Sentinel Rock and North Dome in the distance. Forest growth will impinge upon these views.	Monitor conditions and maintain distant views	Pedestrians can view Sentinel Rock and North Dome in the distance. Forest growth will impinge upon these views.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-126	2	23; Swinging Bridge: Scenic	Pedestrians and cyclists see Yosemite Falls, Sentinel Rock, North Dome. Conifers must be managed to keep the views clear into the future.	Selectively thin encroaching conifers to open distant views	Pedestrians and cyclists see Yosemite Falls, Sentinel Rock, North Dome. Conifers must be managed to keep the views clear into the future.	(CTA) Selectively thin encroaching conifers to open distant views	(CTA) Selectively thin encroaching conifers to open distant views	(CTA) Selectively thin encroaching conifers to open distant views	(CTA) Selectively thin encroaching conifers to open distant views	(CTA) Selectively thin encroaching conifers to open distant views
RES-2-127	2	49; Tunnel View	This highly active attraction site offers long-distance views over the river corridor to Half Dome, Bridalveil Fall, Sentinel Rock, El Capitan and Cathedral Rocks. From time to time, conifers must be removed to preserve views that were established with tunnel construction.	Monitor conditions and maintain distant views	This highly active attraction site offers long-distance views over the river corridor to Half Dome, Bridalveil Fall, Sentinel Rock, El Capitan and Cathedral Rocks. From time to time, conifers must be removed to preserve views that were established with tunnel construction.	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views	(CTA) Monitor conditions and maintain distant views
RES-2-128	2	146; Valley View	Visitors enjoy a dramatic view of El Capitan, Bridalveil Fall, Cathedral Rocks, Leaning Tower from a roadside turnout on Northside Drive at the river's edge. Conifers are encroaching upon meadows across the river.	Selectively thin encroaching conifers to maintain distant views	Visitors enjoy a dramatic view of El Capitan, Bridalveil Fall, Cathedral Rocks, Leaning Tower from a roadside turnout on Northside Drive at the river's edge. Conifers are encroaching upon meadows across the river.	(CTA) Selectively thin encroaching conifers to maintain distant views	(CTA) Selectively thin encroaching conifers to maintain distant views	(CTA) Selectively thin encroaching conifers to maintain distant views	(CTA) Selectively thin encroaching conifers to maintain distant views	(CTA) Selectively thin encroaching conifers to maintain distant views
RES-2-130	2	29; Vernal Fall footbridge	Conifers are encroaching on the riverbanks to limit the view upriver to Vernal Fall.	Selectively thin conifers to maintain view of Vernal Fall	Conifers are encroaching on the riverbanks to limit the view upriver to Vernal Fall.	(CTA) Selectively thin conifers to maintain view of Vernal Fall	(CTA) Selectively thin conifers to maintain view of Vernal Fall	(CTA) Selectively thin conifers to maintain view of Vernal Fall	(CTA) Selectively thin conifers to maintain view of Vernal Fall	(CTA) Selectively thin conifers to maintain view of Vernal Fall
RES-2-131	2	39; Visitor center benches	Park visitors can see Glacier Point and Yosemite Falls from the visitor center, an attraction site that is gradually being surrounded by conifers.	Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls	Park visitors can see Glacier Point and Yosemite Falls from the visitor center, an attraction site that is gradually being surrounded by conifers.	(CTA) Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls	(CTA) Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls	(CTA) Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls	(CTA) Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls	(CTA) Thin encroaching conifers to maintain views of Glacier Point and Yosemite Falls
RES-2-139	2	42; Wosky Pond	From the roadside and trail, visitors see El Capitan and Cathedral Rocks across open space in the forest.	Manage encroaching conifers	From the roadside and trail, visitors see El Capitan and Cathedral Rocks across open space in the forest.	(CTA) Manage encroaching conifers	(CTA) Manage encroaching conifers	(CTA) Manage encroaching conifers	(CTA) Manage encroaching conifers	(CTA) Manage encroaching conifers
RES-2-141	2	18; Yosemite Falls View	Conifers are encroaching on views of Yosemite Falls from the Yosemite Falls trail.	Selectively thin conifers to maintain view of Yosemite Falls	Conifers are encroaching on views of Yosemite Falls from the Yosemite Falls trail.	(CTA) Selectively thin conifers to maintain view of Yosemite Falls	(CTA) Selectively thin conifers to maintain view of Yosemite Falls	(CTA) Selectively thin conifers to maintain view of Yosemite Falls	(CTA) Selectively thin conifers to maintain view of Yosemite Falls	(CTA) Selectively thin conifers to maintain view of Yosemite Falls
RES-2-142	2	19; Yosemite Lodge Portico	Conifers are affecting views of Yosemite Lodge Sentinel Rock, Yosemite Falls from the primary entrance and bus unloading area at Yosemite Lodge.	Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	Conifers are affecting views of Yosemite Lodge Sentinel Rock, Yosemite Falls from the primary entrance and bus unloading area at Yosemite Lodge.	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls	(CTA) Selectively thin conifers to maintain views of Sentinel Rock and Yosemite Falls
RES-2-143	2	Concessioner Stables to Happy Isles: Pack stock trail	The pack stock trail, north of the river, between Clark's Bridge and the Concessioner Stables, is within the ordinary high-water mark. It is continually washed out, which precludes the growth of riparian vegetation, posing a water quality concern due to erosion and sediment washing into the river.	Remove 3,800' of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed (Fig. O).	The pack stock trail, north of the river, between Clark's Bridge and the Concessioner Stables, is within the ordinary high-water mark; the area is subject to seasonal flooding, accelerated erosion, and sediment deposition in the river.	(CTA) Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed. (The stables are removed in this alternative.)	(CTA) Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed. Also, in addition to common to all, re-route stock use north along the road where they meet up on the Valley Loop Trail.	(CTA) Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed. (The stables are removed and converted to camping in this alternative)	(CTA) Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed. Also, in addition to common to all, re-route stock use north along the road where they meet up on the Valley Loop Trail.	(CTA) Remove 3,800 feet of pack stock trail proximate to the riverbank. Remove residual asphalt and other fill material with an excavator and skid steer, decompact hardened surfaces, recontour surfaces and plant riparian vegetation where needed. Also, in addition to common to all, re-route stock use north along the road where they meet up on the Valley Loop Trail.

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RES-2-144	2	Upper Pines: dump station	The Upper Pines dump station is situated very close to the river, leading to some risk of river contamination.	Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.	The Upper Pines dump station is situated very close to the river.	(CTA) Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.	(CTA) Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.	(CTA) Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.	(CTA) Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.	(CTA) Relocate the dump station to between Curry and the campgrounds entrance, as planned with relocation of the utilities.
RES-2-145	2	Cathedral Beach Picnic Area: Effects on Riparian Zone and Visitor Experience	The Cathedral Beach picnic area is negatively affected by high visitor use, exceeding the design of the existing infrastructure. The resulting loss of riparian vegetation contributes to riverbank erosion.	Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.	Visitor use at the Cathedral Beach picnic area exceeds the design of the existing infrastructure. There is no formal river access and the parking is not delineated. Picnic benches are easily moved throughout the area. The resulting loss of riparian vegetation contributes to riverbank erosion.	(CTA) Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.	(CTA) Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.	(CTA) Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.	(CTA) Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.	(CTA) Designate area as a formal river access point, fence off sensitive areas, direct use to more resilient areas, and reestablish impacted native riparian vegetation. Remove parking in the riparian zone, decompact soils, plant appropriate vegetation and delineate river access. Remove infrastructure (toilets, parking and picnic tables) in the 10-year floodplain, decompact soils, plant appropriate vegetation and delineate river access.
RES-2-146	2	Yosemite Village Day-use Parking Area: Restoration	This unimproved parking area has no mitigations for water quality. It is in the 5-10-yr floodplain, was formerly a meadow, and is in the potential channel migration zone. Some areas of the Yosemite Village Day-use Parking Area are constructed with fill, decreasing the extent of overbank flooding.		This unimproved parking area has no mitigations for water quality. It is in the 5-10-year floodplain, was formerly a meadow, and is in the potential channel migration zone. Some areas of Yosemite Village Day-use Parking Area are constructed with fill.	Move unimproved parking area north closer to the Village Center and reroute Northside Drive to just above the 10-year floodplain. Remove fill material and restore meadow and floodplain ecosystems.	Move unimproved parking area north closer to the Village Center and reroute Northside Drive to just above the 10-year floodplain. Remove fill material and restore meadow and floodplain ecosystems.	Move the unimproved parking lot northward approximately 150 feet away from the ordinary high-water mark and wetland areas and restore the riparian habitat adjacent to the river.	Move the unimproved parking lot northward approximately 150 feet away from the ordinary high-water mark and wetland areas and restore the riparian habitat adjacent to the river.	Move the unimproved parking lot northward approximately 150 feet away from the ordinary high-water mark and wetland areas and restore the riparian habitat adjacent to the river.
RES-2-149	2	Yosemite Lodge: Beach Access	Visitors at Yosemite Lodge do not have good beach access near the lodge.	Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.	Visitors at Yosemite Lodge do not have good beach access near the lodge.	(CTA) Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.	(CTA) Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.	(CTA) Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.	(CTA) Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.	(CTA) Direct visitors to the sandbar at Swinging Bridge. Fence riparian area at Yosemite Lodge.
RES-2-150	2	Residence 1: poor condition, recurring flooding and informal trails	Residence 1, also known as the Superintendent's House, is subject to recurring flooding and subsequent water damage. The historic interior finishes of the historic residence, especially the distinctive plaster work, are in poor condition. Also, structural issues related to settling of the foundation have resulted in displacement of walls and floors. Visitor use in this area has caused radiating informal trails that impact Cook's Meadow.		Residence 1, also known as the Superintendent's House, is subject to recurring flooding and subsequent water damage. The historic interior finishes of the Superintendent's House, especially the distinctive plaster work, are in poor condition. Also, structural issues related to settling of the foundation have resulted in displacement of walls and floors. Visitor use in this area has caused radiating informal trails that impact Cook's Meadow.	Relocate Residence 1 (the Superintendent's House) to the NPS housing area and, at a minimum, rehabilitate the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012). Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.	Relocate Residence 1 (the Superintendent's House) to the NPS housing area and, at a minimum, rehabilitate the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012). Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.	Relocate Residence 1 (the Superintendent's House) to the NPS housing area and, at a minimum, rehabilitate the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012). Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.	Relocate Residence 1 (the Superintendent's House) to the NPS housing area and, at a minimum, rehabilitate the building per the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012). Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.	Rehabilitate Residence 1 (Superintendent's House) per Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995) and the Historic Structure Report (2012) in its existing location to preserve the historic fabric while preparing the structure to withstand periodic flooding. Ecologically restore associated informal trails in Cook's Meadow and address continuing use patterns to enhance black oak woodland and meadow habitat.
RES-2-151	2	Ahwahnee Meadow: former golf course and tennis court	The Ahwahnee Meadow contains several modifications to topography that impact meadow quality and hydrologic function. These include ditching; fill material still found in the former golf course, former roadbed and the SW corner of the meadow; large conifers that have become established along the former roadbed. Additionally, the tennis court is in a black oak community.	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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.	The Ahwahnee Meadow contains several modifications to topography. These include ditching; fill material still found in the former golf course, former roadbed and the SW corner of the meadow; large conifers that have become established along the former roadbed. Additionally, the tennis court is in a black oak community.	(CTA) 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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.	(CTA) 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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.	(CTA) 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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.	(CTA) 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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.	(CTA) 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. Reconnect currently disjunct portions of Ahwahnee Meadow by removing conifers to return approximately 5.7 acres to meadow habitat.

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RES-2-152	2	CA-MRP-0902/H	Informal trails contribute to archeological site disturbances at CA-MRP-0902/H.	Remove informal trails that contribute to archeological site disturbance.	Informal trails contribute to archeological site disturbances at CA-MRP-0902/H.	(CTA) Remove informal trails that contribute to archeological site disturbance.	(CTA) Remove informal trails that contribute to archeological site disturbance.	(CTA) Remove informal trails that contribute to archeological site disturbance.	(CTA) Remove informal trails that contribute to archeological site disturbance.	(CTA) Remove informal trails that contribute to archeological site disturbance.
RES-2-153	2	Stoneman Meadow protection and enhancement	Stoneman Meadow contains a ditch that may lower the water table. Invasive plants and conifers have become established in the meadow. Wetlands surrounding Stoneman Meadow are vulnerable to trampling. Current fencing could be better situated to protect these wetlands.	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 revegetate.	Ditching remains in the Stoneman Meadow. Wetlands not protected by fencing are vulnerable to trampling.	(CTA) 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 revegetate.	(CTA) 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 revegetate.	(CTA) 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 revegetate.	(CTA) 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 revegetate.	(CTA) 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 revegetate.
RES-2-154	2	Former Pine and Oak	Removal of the former Yosemite Lodge units and cabins after the 1997 flood has left the area with fill and impacts from soil compaction. A network of roads remains that once facilitated access to these lodging units.		There is no development in the site of the former Pine and Oak cabins at Yosemite Lodge. Removal of the former Yosemite Lodge units and cabins after the 1997 flood has left the area with fill and impacts from soil compaction. A network of roads remains that once facilitated access to these lodging units.	Restore 10.9 acres of riparian 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 fill, decompact soils and plant riparian plant species.	Restore 10.9 acres of riparian 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 fill, decompact soils and plant riparian plant species.	Restore 10.9 acres of riparian 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 fill, decompact soils and plant riparian plant species.	Restore 10.9 acres of riparian 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 fill, decompact soils and plant riparian plant species.	Construct parking on 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.
RES-2-155	2	Valley Swinging Bridge river access	Current fencing along the bike path leads people to access the river upstream, river right of Swinging Bridge and has lead to vegetation trampling and erosion.	Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.	Current fencing along the bike path leads people to access the river upstream, river right of Swinging Bridge and has lead to vegetation trampling and erosion.	(CTA) Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.	(CTA) Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.	(CTA) Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.	(CTA) Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.	(CTA) Move fencing to connect to bridge and restore denuded area. Direct use to a large sandbar directly downstream of bridge.
RES-2-156	2	Conifer encroachment in meadows	Conifers have been encroaching on Yosemite Valley meadows due to changes in ecological processes including alteration of fire regime, alteration of hydrology and changes in climate.	Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.	Conifers have been encroaching on Yosemite Valley meadows due to changes in ecological processes including alteration of fire regime, alteration of hydrology and changes in climate.	(CTA) Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.	(CTA) Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.	(CTA) Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.	(CTA) Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.	(CTA) Manually or mechanically remove conifer seedlings and saplings from meadows and black oak communities in Yosemite Valley. Restore low-intensity, high frequency fire as an ecological process. Restore hydrologic processes where possible.
RES-2-157	2	16; Ahwahnee Hotel front lawn	Views of Royal Arches and Half Dome Dome are obscured by increasing conifer forest growth and encroachment on open spaces surrounding the hotel.	Selectively thin conifers to open view.	Conifer encroachment growth is limiting views of Royal Arches and Half Dome.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.
RES-2-158	2	226; Cathedral Beach Parking	Views from the picnic the river and nearby granite monoliths are hampered by conifer forest growth and encroachment on the river.	Selectively thin conifers to open view.	Conifer growth is affecting views of the river and granite monoliths, from the picnic area.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.	(CTA) Selectively thin conifers to open view.
RES-2-159	2	LeConte Memorial Lodge	LeConte Memorial Lodge NHL is currently in "fair" condition	Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.	LeConte Memorial Lodge NHL is currently in "fair" condition	(CTA) Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.	(CTA) Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.	(CTA) Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.	(CTA) Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.	(CTA) Develop a Historic Structure Report and address recommendations for treatment to bring the NHL to "good" condition.
RES-2-160	2	Superintendent's Bridge, which is a footbridge, and associated revetments	Superintendent's Bridge, which is a footbridge, affects the free-flowing condition of the Merced Wild and Scenic River	Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.	Superintendent's Bridge, which is a footbridge, constricts hydrologic flow of the Merced River.	(CTA) Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.	(CTA) Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.	(CTA) Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.	(CTA) Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.	(CTA) Install constructed log jams, and utilize bioconstructed stabilization on riprap to improve hydrologic function.

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RES-2-161	2	Yosemite Valley Traditional Cultural Property Nomination	The ethnographic resources in Yosemite Valley have not been documented, mapped, or evaluated to provide the detail necessary for legally-required protection and enhancement of the resources, and for accurate and timely information for interpretive programs.	Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.	The ethnographic resources in Yosemite Valley have not been documented, mapped, or evaluated to provide the detail necessary for legally-required protection and enhancement of the resources, and for accurate and timely information for interpretive programs.	(CTA) Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.	(CTA) Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.	(CTA) Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.	(CTA) Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.	(CTA) Document the Yosemite Valley Traditional Cultural Property, consisting of traditional use areas, spiritual places and historic villages and complete National Register evaluation and interpretive summary.
TRAN-2-001	2	Yosemite Village Day-use Parking Area: Vehicle vs. pedestrian conflicts and intersection performance at Northside Drive and Village Drive	Throughout the peak summer season, significant delays in outbound traffic flow are experienced at the intersection of Northside Drive and Village Drive due to vehicle-pedestrian conflicts and poor intersection performance.		Throughout the peak summer season, significant delays in outbound traffic flow are experienced at Yosemite Village Day-use Parking Area intersection. This is an offset four-way intersection connecting the exit to Yosemite Village Day-use Area, Northside Drive, and Village Drive. A bike path, shuttle stop, and pedestrian crossings through this intersection create conflicts between vehicular and pedestrian traffic. The intersection's offset design also creates confusion for motorists diminishing the intersection performance significantly. The intersection is not currently designed to traffic engineering standards for such intersections.	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. Re-designed traffic circulation patterns would not require roundabouts or pedestrian road crossings.	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. Re-designed traffic circulation patterns would not require roundabouts or pedestrian road crossings.	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 parking area to improve traffic flow and alleviate congestion. Provide on-grade pedestrian crossings with proper sight lines to improve vehicle-pedestrian conflicts.	Re-route Northside Drive to the south of the Yosemite Village Day-use Parking Area and construct a traffic circle at Northside Drive/Village Drive to address traffic congestion and pedestrian/vehicle conflicts. 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.	Construct a pedestrian underpass and a roundabout at the Northside Drive/ Village Drive to address traffic congestion and pedestrian/vehicle conflicts. Add a three-way intersection at Sentinel Drive and the entrance to the parking area to improve traffic flow and alleviate congestion. To accommodate this level of in-bound traffic, another roundabout would be constructed at the Sentinel Drive/Northside Drive intersection (Bank 3-Way).
TRAN-2-002	2	Yosemite Village: Intersection Congestion at Northside Drive and Sentinel Drive (the Bank 3-Way)	Throughout the peak summer season, significant delays in outbound traffic flow are experienced at Bank 3-Way Intersection and Northside Dr.		Throughout the peak summer season, significant delays in outbound traffic flow are experienced at the intersection of Northside Drive and Sentinel Drive (Bank 3-Way).	No roundabout needed at the Bank 3-way.	No roundabout needed at the intersection of Northside Drive and Sentinel Drive (Bank 3-Way).	No roundabout needed at the intersection of Northside Drive and Sentinel Drive (Bank 3-Way).	No roundabout needed at the intersection of Northside Drive and Sentinel Drive (Bank 3-Way).	A roundabout would be installed at the intersection of Northside Drive and Sentinel Drive (Bank 3-Way). To accommodate this level of in-bound traffic, another roundabout would be constructed at Northside Drive/Village Drive.
TRAN-2-005	2	Yosemite Lodge: intersection congestion	Throughout the peak summer season, significant delays in outbound traffic flow are experienced at the pedestrian crossing from Yosemite Lodge to Lower Yosemite Falls.		Both day users and Yosemite Lodge overnight guests cross at this intersection to get to and from the Falls.	Move on-grade pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to alleviate pedestrian/vehicle conflicts.	Move on-grade pedestrian crossing west of the intersection of Northside Drive and Yosemite Lodge Drive to alleviate pedestrian/vehicle conflicts.	Design a pedestrian underpass to alleviate pedestrian/vehicle conflicts.	Design a pedestrian underpass to alleviate pedestrian/vehicle conflicts.	Design a pedestrian underpass to alleviate pedestrian/vehicle conflicts.
TRAN-2-007	2	Curry Orchard parking area	Demand for parking exceeds supply. There is a need to provide the appropriate level of parking that is protective of river values.		The Curry Orchard Parking area currently has 424 parking spaces.	The Curry Orchard Parking area would be formalized to have 420 parking spaces.	Partial restoration of the Curry Orchard Parking area to facilitate Stoneman Meadow restoration; removes 50 spaces for re-alignment to allow for a total of 300 parking spaces.	Partial restoration of the Curry Orchard Parking area to facilitate Stoneman Meadow restoration; removes 50 spaces for re-alignment to allow for a total of 300 parking spaces.	The Curry Orchard Parking area would be formalized to have 430 parking spaces.	The Curry Orchard Parking area would be formalized to have 430 parking spaces.
TRAN-2-008	2	West of Yosemite Lodge: Yosemite Lodge Parking Area	Demand for day use parking exceeds supply. There is also need to provide the appropriate level of day-use parking that is protective of river values.		The west portion of the Yosemite Lodge is a previously disturbed area that has become overflow parking for tour buses and transit buses, day use and overnight use. The area was formerly employee housing prior to the 1997 flood.	Yosemite Lodge Parking Area re-developed to provide additional 150 day-use parking spaces. This parking area will also accommodate 15 tour buses.	Yosemite Lodge Day-use Parking Area re-developed to provide additional 150 day-use parking spaces. This parking area will also accommodate 15 tour buses.	Yosemite Lodge Day-use Parking Area re-developed to provide additional 150 day-use parking spaces. This parking area will also accommodate 15 tour buses.	Yosemite Lodge Day-use Parking Area re-developed to provide additional 300 day-use parking spaces. This parking area will also accommodate 15 tour buses.	Yosemite Lodge Day-use Parking Area re-developed to provide additional 300 day-use parking spaces. This parking area will also accommodate 15 tour buses.
TRAN-2-009	2	West Valley Overflow Parking Area	Demand for day-use parking exceeds supply. There is also need to provide the appropriate level of day-use parking that is protective of river values.		The West Valley Overflow Parking Area would be located just west of Cathedral Picnic area. This area is flat and has limited resource constraints.	No new parking developed.	No new parking developed.	No new parking developed.	West Valley Overflow Parking Area developed to provide 100 overflow parking spaces south of Southside Drive; Yosemite Valley shuttle service expanded to West Valley.	West Valley Overflow Parking Area developed to provide 250 overflow parking spaces south of Southside Drive; Yosemite Valley shuttle service expanded to West Valley.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
TRAN-2-010	2	Yosemite Lodge: Day-use Lodge Parking	Public comments suggest that the NPS should convert overnight accommodations in Yosemite Valley to day use parking.		Yosemite Lodge area would continue to be used for overnight lodging, parking and food service.	Re-design lodging area at Yosemite Lodge to include 250 parking spaces.	Lodging area not re-designed as day use lodge and parking.	Lodging area not re-designed as day use lodge and parking.	Lodging area not re-designed as day use lodge and parking.	Lodging area not re-designed as day use lodge and parking.
TRAN-2-011	2	Yosemite Lodge: Day-use parking demand	Demand for day-use parking exceeds supply during summer peak use periods. There is also need to provide the appropriate level of day-use parking that is protective of river values.		Demand for day-use parking exceeds supply during summer peak-use periods.	No redesign of parking.	No redesign of parking.	25 additional spaces at Yosemite Lodge due to redesign, improving parking efficiency near Northside Drive.	25 additional spaces at Yosemite Lodge due to redesign, improving parking efficiency near Northside Drive.	25 additional spaces at Yosemite Lodge due to redesign, improving parking efficiency near Northside Drive.
TRAN-2-013	2	Sentinel Drive informal shoulder parking west of road	Informal shoulder parking overflow from Yosemite Village Day-use Parking Area (Camp 6) is encroaching on sensitive habitat in this location.	Remove roadside parking along Sentinel Dr. and restore to natural conditions.	Informal shoulder parking overflow from Yosemite Village Day-use Parking Area (Camp 6) day use parking area is encroaching on sensitive habitat in this location.	(CTA) Remove roadside parking along Sentinel Drive and restore to natural conditions.	(CTA) Remove roadside parking along Sentinel Drive and restore to natural conditions.	(CTA) Remove roadside parking along Sentinel Drive and restore to natural conditions.	(CTA) Remove roadside parking along Sentinel Drive and restore to natural conditions.	(CTA) Remove roadside parking along Sentinel Drive and restore to natural conditions.
TRAN-2-014	2	The Ahwahnee: Parking	Parking and traffic circulation at The Ahwahnee is inadequate to meet overnight and day-use demand.	Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration.	Parking and traffic circulation at the Ahwahnee is inadequate to meet overnight and day-use demand.	(CTA) Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration	(CTA) Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration	(CTA) Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration	(CTA) Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration	(CTA) Re-design and formalize the existing parking lot; providing for proper drainage. Construct new 50 parking space lot east of the current parking. Follow Ahwahnee Historic Structures Report (1997) and Ahwahnee Cultural Landscape Report (2010) recommendations for parking lot configuration and gate house restoration
TRAN-2-015	2	Curry Village wilderness parking area	Wilderness-related parking area is a former dump site that was not designed as a formal parking area. It is not delineated and undersized for demand.	Remediate the soils at the Wilderness Parking lot, which was once a landfill for Curry Village and formalize parking.	Wilderness parking area was not designed as a formal parking area. It is undersized for demand and not delineated. It was used in the past as the Curry Village dump site.	(CTA) Remediate the Curry Village dump at the Wilderness parking lot and formalize parking and provide for proper drainage.	(CTA) Remediate the Curry Village dump at the Wilderness parking lot and formalize parking and provide for proper drainage.	(CTA) Remediate the Curry Village dump at the Wilderness parking lot and formalize parking and provide for proper drainage.	(CTA) Remediate the Curry Village dump at the Wilderness parking lot and formalize parking and provide for proper drainage.	(CTA) Remediate the Curry Village dump at the Wilderness parking lot and formalize parking and provide for proper drainage.
TRAN-2-016	2	Camp 4 Parking	The Camp 4 parking lot is inadequately sized for overnight parking and trailhead parking. Also, the demand for day-use parking in the area exceeds the supply.	In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.	The Camp 4 parking lot is inadequately sized for current levels of overnight and trailhead parking. There are a total of 89 parking spaces in the main Camp 4 parking lot. Currently, there are 29 overnight vehicles overflow across the road and 33 day-use vehicles overflow across the road.	(CTA) In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.	(CTA) In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.	(CTA) In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.	(CTA) In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.	(CTA) In place of the old gas station, establish a new 41-space parking lot for Camp 4 campground.
TRAN-2-017	2	Camp 4 Shuttle Stop	Camp 4 Shuttle Stop for El Capitan shuttle is not a formal, appropriately designed shuttle stop.	Construct a shuttle bus stop near Camp 4.	Camp 4 shuttle stop is not a formal stop.	(CTA) Construct a shuttle bus stop near Camp 4.	(CTA) Construct a shuttle bus stop near Camp 4.	(CTA) Construct a shuttle bus stop near Camp 4.	(CTA) Construct a shuttle bus stop near Camp 4.	(CTA) Construct a shuttle bus stop near Camp 4.
TRAN-2-018	2	El Capitan Shuttle Stop	The shuttle stop at El Capitan is not a formal, appropriately designed stop.	Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.	The shuttle stop at El Capitan is not a formal, appropriately designed stop.	(CTA) Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.	(CTA) Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.	(CTA) Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.	(CTA) Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.	(CTA) Construct a formal Shuttle bus stop in a location appropriate to the design for the restoration of the meadow and formalized access.
TRAN-2-019	2	Yosemite Village Day-Use Parking Area: Wayfinding	Visitors have difficulty finding visitor facilities, including the Visitor Center, from the current Yosemite Village Day-use Parking Area (Camp 6).	Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from the Yosemite Village Day-use Parking Area (Camp 6) to the Village Sport Shop building.	Visitors have difficulty finding visitor facilities, including the Visitor Center, from the current Yosemite Village Day-use Parking Area (Camp 6) .	(CTA)Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from the Yosemite Village Day-use Parking Area to the Village Sport Shop building.	(CTA)Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from the Yosemite Village Day-use Parking Area to the Village Sport Shop building.	(CTA)Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from the Yosemite Village Day-use Parking Area to the Village Sport Shop building.	(CTA)Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from Yosemite Village Day-use Parking Area to the Village Sport Shop building.	(CTA)Repurpose the Village Sport Shop to public use and remove the Arts and Activities Center (Bank Building). Create pathways leading from the Yosemite Village Day-use Parking Area to the Village Sport Shop building.

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TRAN-2-020	2	Yosemite Village Day-use Parking Area: Day-Use Parking Area	The Yosemite Village Day-use Parking Area is a six-acre dirt lot, currently being used to park approximately 517 vehicles on peak days using directed parking. There are 237 Yosemite Village parking spaces. Demand for day parking exceeds supply during summer peak use periods.		Yosemite Village Day-use Parking Area (Camp 6) is an approx. 6 acre dirt lot, currently being used to park approximately 517 vehicles on peak days using directed parking. There are 237 Yosemite Village parking spaces.	Move Yosemite Village Day-use Parking Area parking northward outside the 10-year floodplain and reroute Northside Drive south of the parking area, thus eliminating the need for a pedestrian underpass or roundabouts. Formalize the Yosemite Village Day-use Parking Area with a total of 550 parking places by redeveloping part of the current administrative footprint as parking.	Move Yosemite Village Day-use Parking Area northward outside the 10-year floodplain and reroute Northside Drive south of the parking area, thus eliminating the need for a pedestrian underpass or roundabouts. Formalize the Yosemite Village Day-use Parking Area with a total of 550 parking places by redeveloping part of the current administrative footprint as parking.	Move Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate riparian restoration goals. Formalize the Yosemite Village Day-use Parking Area with a total of 750 parking places by redeveloping part of the current administrative footprint as parking.	Move Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate riparian restoration goals. Formalize the Yosemite Village Day-use Parking Area with a total of 850 parking places by redeveloping part of the current administrative footprint as parking.	Move Yosemite Village Day-use Parking Area northward 150 feet away from the river to facilitate riparian restoration goals. Formalize the Yosemite Village Day-use Parking Area with a total of 850 parking places by redeveloping part of the current administrative footprint as parking.
TRAN-2-021	2	Yosemite Lodge: Highland Court	Currently, there is no parking at Highland Court, due to the placement of temporary housing in the parking lot, after the 1997 flood.		Currently, there is no parking at Highland Court, due to the placement of temporary housing in the parking lot, after the 1997 flood.	Area converted to walk-in campground (See Yosemite Lodge: re-purposed as camping)	Relocate the existing tour bus drop-off area to the Highland Court area to provide 3 bus loading/unloading spaces.	Relocate the existing tour bus drop-off area to the Highland Court area to provide 3 bus loading/unloading spaces.	Relocate the existing tour bus drop-off area to the Highland Court area to provide 3 bus loading/unloading spaces.	Relocate the existing tour bus drop-off area to the Highland Court area to provide 3 bus loading/unloading spaces.
RES-3-001	3	Cascades picnic area: abandoned infrastructure	Abandoned infrastructure (no longer in use) including a picnic table-sized concrete block, surface concrete, asphalt and 1-2' base material (rock) prevents river from shaping this area and impedes free flow during high water events.	Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	At the Cascade Picnic Area there is abandoned infrastructure including a picnic table-sized concrete block, surface concrete, asphalt and 1-2 feet base material (rock).	(CTA) Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	(CTA) Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	(CTA) Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	(CTA) Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.	(CTA) Remove abandoned infrastructure including cement block, surface concrete and asphalt and imported rock.
RES-3-002	3	35; Cascade Falls viewpoint	The growth of conifer and oak trees will affect views of Cascade Falls where seen by visitors from El Portal Road.	Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.	The growth of conifer and oak trees affect views of Cascade Falls where seen by visitors from El Portal Road.	(CTA) Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.	(CTA) Selectively remove conifers to maintain views. Leave oaks due to their protection as an ethnographic ORV.
FAC-4-002	4	Abbieville and Trailer Village housing	The Abbieville and Trailer Village area are currently used for temporary employees or employees that work for one of the park partners. The area is underutilized and represents an area that could be used by the park for additional infrastructure.	All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.	The Abbieville and Trailer Village area is located in El Portal adjacent to the river. The area is outside the 100-year floodplain. It is used for housing for temporary NPS employees or employees that work for park partners. The area is underutilized and could be converted to a more efficient land use.	This area would become 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. Also construct a group administrative campground here to replace Yellow Pine Administrative Campground removed from Yosemite Valley.(CTA) Remove or relocate 36 existing private residences. Former footprints within the 150-foot riparian buffer would be ecologically restored. All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.	Continue to provide for housing land use for 40 employees and volunteers at this location. (CTA) Remove or relocate 36 existing private residences. Former footprints within the 150-foot riparian buffer would be ecologically restored. All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.	Continue to provide for housing land use for 40 employees and volunteers at this location. (CTA) Remove or relocate 36 existing private residences. Former footprints within the 150-foot riparian buffer would be ecologically restored. All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.	Continue to provide for housing land use for 40 employees and volunteers at this location. (CTA) Remove or relocate 36 existing private residences. Former footprints within the 150-foot riparian buffer would be ecologically restored. All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.	This area would become concessioner housing. Develop high-density housing units here for 258 employees to accommodate removal of temporary employee housing in Yosemite Valley,. (CTA) Remove or relocate 36 existing private residences. Former footprints within the 150-foot riparian buffer would be ecologically restored. All housing re-development in this area will be outside the 100-year floodplain. Other redevelopment will be outside of the 150-foot riparian buffer.
FAC-4-003	4	Old El Portal Residential Area	El Portal was placed under Park jurisdiction for the purposes of administrative use, including office space and employee housing, in order to alleviate the pressure on the Valley.	Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.	There are nine vacant lot sites in old El Portal.	(CTA) Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.	(CTA) Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.	(CTA) Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.	(CTA) Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.	(CTA) Construct infill housing units, providing 12 employee beds, in vacant lots in old El Portal to facilitate removal of temporary housing in Yosemite Valley.
FAC-4-004	4	Rancheria Flat	El Portal was placed under park jurisdiction for the purposes of administrative use, including office space and employee housing, in order to alleviate the pressure on Yosemite Valley.		There are vacant lots in the Rancheria Flat area of El Portal.	Build new units, away from sensitive resources/ORVs, for a total of 9 employee beds.	Build 1 dormitory for 12 employees plus units for 7 additional employees, away from sensitive resources/ORVs, for a total of 19 employee beds.	Build 8 dormitories (12 employees each), away from sensitive resources/ORVs, for a total of 96 employee beds.	Build 7 dormitories (12 employees each), away from sensitive resources/ORVs, for a total of 84 employee beds	Build 3 dormitories (12 employees each) and units for 8 additional employees, away from sensitive resources/ORVs, for a total of 44 employee beds.

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FAC-4-005	4	Odger's fuel storage facility: located in floodplain	Presence of this facility in the floodplain is not in compliance with Director's Order 77-2 NPS Floodplains Guidelines that require fuel storage facilities to be located outside the 500-year floodplain.	(CTA) 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.	Presence of this facility in the floodplain is not in compliance with DO 77-2 NPS Floodplains Guidelines which require fuel storage facilities to be located outside of the 500-year floodplain.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.
RES-4-002	4	Old El Portal: parking and development in valley oaks	Seedling recruitment within the rare floodplain community of valley oaks in Old El Portal is limited by competition from invasive species, parking under the driplines of trees, associated soil compaction, herbivory, and existing development. Valley oaks are also sensitive to overwatering, pruning, grade changes, and asphalt covering the root system.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D).	The valley oak population at El Portal exists in a generally protected state, but oak seedling recruitment is limited by competition from invasive species, parking under the driplines of trees and associated soil compaction, herbivory, and existing development. Valley oaks are also sensitive to overwatering, pruning, grade changes, and asphalt covering the root system.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.	(CTA PORTION) Restore the rare floodplain community of valley oaks in Old El Portal through implementation of mitigation measures related to invasive species removal, overwatering, tree pruning, and prohibiting grading and parking in the dripline (see Appendix D). Also, 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 adjacent parking lots. Decompact soils, plant appropriate native understory plant species, and treat invasive plants. Prohibit new building construction within the oak recruitment area.
RES-4-003	4	CA-MRP-0250/H	Informal trails, non-essential gravel roads, and visitor use contribute to archeological site disturbances at CA-MRP-0250/H in Old El Portal.	Remove informal trails and non-essential roads	Informal trails, non-essential gravel roads, and visitor use contribute to archeological site disturbances at CA-MRP-0250/H in Old El Portal.	(CTA) Remove informal trails and non-essential roads	(CTA) Remove informal trails and non-essential roads	(CTA) Remove informal trails and non-essential roads	(CTA) Remove informal trails and non-essential roads	(CTA) Remove informal trails and non-essential roads
RES-4-004	4	CA-MRP-0251/H	Informal trails, non-essential gravel roads, and visitor use contribute to archeological site disturbances at CA-MRP-0251/H in Old El Portal.	Remove informal trails.	Informal trails, non-essential gravel roads, and visitor use contribute to archeological site disturbances at CA-MRP-0251/H in Old El Portal.	(CTA) Remove informal trails.	(CTA) Remove informal trails.	(CTA) Remove informal trails.	(CTA) Remove informal trails.	(CTA) Remove informal trails.
RES-4-005	4	Greenemeyer sand pit: flood and riparian plant impacts from fill material	Greenemeyer sand pit contains fill material that precludes natural flooding and regeneration of riparian plant communities.	Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.	Greenemeyer sand pit contains fill material that precludes natural flooding and regeneration of riparian plant communities.	(CTA) Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.	(CTA) Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.	(CTA) Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.	(CTA) Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.	(CTA) Restore the Greenemeyer sand pit to natural conditions; remove fill material and recontour. Retain road for river and utility access.
RES-4-006	4	El Portal: river confined by riprap and road	The Merced River in El Portal is confined by riprap and Highway 140.	Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.	The Merced River in El Portal is confined by riprap and Highway 140.	(CTA) Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.	(CTA) Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.	(CTA) Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.	(CTA) Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.	(CTA) Develop standards for revetment construction and repair throughout the river corridor. Vertical walls should be used wherever possible. Provide Caltrans with recommendations when repair/replacement is necessary in Segment 4.

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RES-4-007	4	El Portal NPS Maintenance and administrative complex: roadside parking.	The off-street and roadside parking areas located between the Merced River and Foresta Road were not designed or built to prevent water-quality contamination from automotive fluids, surface water runoff or sediment transport.	Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building by using best management practices to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.	The off-street and roadside parking areas located between the Merced River and Foresta Road were not designed or built to prevent water quality contamination from automotive fluids, surface water runoff or sediment transport.	(CTA) Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building by using best management practices to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.	(CTA) Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building by using best management practices to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.	(CTA) Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building by using best management practices to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.	(CTA) Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building by using best management practices to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.	(CTA) Pave the existing dirt parking area located across Foresta Road from the NPS Warehouse Building to formalize and maximize parking within the existing footprint. Restore the informal roadside parking, which is southeast of the dirt parking area, between Foresta Road and the Merced River.
RES-4-008	4	Riparian Buffer at Abbieville and Trailer Village	Abbieville and the Trailer Village contain impacts of former development including paved roads and parking and compacted soils within 150' of the riverbanks.	Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.	Abbieville and the Trailer Village contain impacts of former development including paved roads and parking and compacted soils within 150' of the riverbanks.	(CTA) Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.	(CTA) Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.	(CTA) Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.	(CTA) Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.	(CTA) Remove development, asphalt and imported fill; recontour and plant native riparian species and oaks within the 150-foot riparian buffer.
TRAN-4-001	4	El Portal remote visitor parking	Demand for day-use parking exceeds supply. There is also need to provide the appropriate level of day-use parking that is protective of river values.		The Abbieville and Trailer Village area is located in El Portal adjacent to the River. The area is outside the 100-year floodplain. It is used for housing for temporary NPS employees or employees that work for Park Partners. The area is underutilized and could be converted to a more efficient land use.	No new overflow day-use parking spaces would be added here. A portion of this area would be for group administrative camping removed from Yellow Pine Administrative Campground in Yosemite Valley.	No new parking spaces added at the Abbieville/Trailer Village area.	Develop El Portal remote day-use visitor parking area at the Abbieville/Trailer Village area to provide 200 spaces of visitor parking serviced by regional transit.	Develop El Portal Remote Visitor Parking Area in the Abbieville/Trailer Village area to provide 200 spaces of visitor parking serviced by regional transit.	Develop El Portal Remote Visitor Parking Area at the Abbieville/Trailer Village area to provide 200 spaces of visitor parking serviced by regional transit.
RES-5-001	5	CA-MRP-0218	Informal trails and visitor use cause ground disturbing impacts to surface and sub-surface archeological resources at CA-MRP-0218.	Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).	Informal trails and visitor use cause ground disturbing impacts to surface and sub-surface archeological resources at CA-MRP-0218.	(CTA) Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).	(CTA) Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).	(CTA) Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).	(CTA) Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).	(CTA) Remove informal trails and charcoal rings. Restrict Wilderness camping in the area of the rock rings (camping allowed past particular marker).
RES-6-001	6	Wawona Impoundment: effects to free-flowing condition	Surface water withdrawals and impoundment affect the free-flowing condition of the river; excessive water withdrawals limit aquatic life.	Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.	Surface water withdrawals reduce the flow of water during dry summer months. The impoundment is within the bed and banks of the river.	(CTA) Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.	(CTA) Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.	(CTA) Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.	(CTA) Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.	(CTA) Retain current water collection and distribution system, implementing the water conservation plan related to the minimum flow analysis for the South Fork.
FAC-7-001	7	Wawona Maintenance yard: Riparian Impacts	The footprint of the Wawona maintenance yard extends to the riverbank. The yard is devoid of vegetation, soils are compacted and non-native fill material covers the lot. Soil and sand piles, vehicles and items such as campfire rings are stored here.	Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.	The footprint of the Wawona maintenance yard extends to the riverbank. The yard is devoid of vegetation, soils are compacted and non-native fill material covers the lot. Soil and sand piles, vehicles and items such as campfire rings are stored here.	(CTA) Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.	(CTA) Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.	(CTA) Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.	(CTA) Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.	(CTA) Remove staged materials, abandoned utilities, vehicles, and parking lot from the riparian buffer and restore a native ecosystem. Provide a 150-foot wide restoration buffer.
FAC-7-002	7	Wawona public restrooms	There are inadequate public restroom facilities in the Wawona day-use area.	Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.	There are inadequate public restroom facilities in the Wawona day-use area.	(CTA) Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.	(CTA) Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.	(CTA) Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.	(CTA) Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.	(CTA) Replace the existing public restroom facilities next to the Wawona Store with larger restrooms.
FAC-7-003	7	Wawona Hotel: Services and Facilities	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.	Retain hotel restaurant and swimming pool.	Wawona Hotel restaurant, swimming pool, and tennis courts are used by overnight guests at the Wawona Hotel.	(CTA) Retain hotel restaurant and swimming pool.Remove Wawona tennis court.	(CTA) Retain hotel restaurant and swimming pool.Remove Wawona tennis court.	(CTA) Retain hotel restaurant and swimming pool.Retain Wawona tennis court.	(CTA) Retain hotel restaurant and swimming pool.Retain Wawona tennis court.	(CTA) Retain hotel restaurant and swimming pool.Retain Wawona tennis court.

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FAC-7-004	7	Wawona Maintenance yard: Operations	The facilities and layout at the Wawona maintenance yard are not optimal for operational efficiency.	Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800-square-foot combined structural and wildland fire station, and a 4,000-square-foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.	The facilities and layout at the Wawona maintenance yard are not optimal for operational efficiency.	(CTA) Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800 square foot combined structural and wildland fire station, and a 4,000 square foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.	(CTA) Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800-square-foot combined structural and wildland fire station, and a 4,000-square-foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.	(CTA) Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800-square-foot combined structural and wildland fire station, and a 4,000-square-foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.	(CTA) Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800-square-foot combined structural and wildland fire station, and a 4,000-square-foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.	(CTA) Construct a 4,500-square-foot building and grounds maintenance facility, a 6,800-square-foot combined structural and wildland fire station, and a 4,000-square-foot roads maintenance facility. Rehabilitate the existing California Conservation Corp structures for potential re-use.
FAC-7-005	7	Wawona Stables	Public comments suggest that the NPS should define the environmental effects and capacity of the built environment in Yosemite for various buildings, areas and kinds of use.		The concessioner stables operation would continue in its present location, offering day rides.	The stables operation and day rides are eliminated. The Wawona stock use campground (2 sites) is relocated to this area.	The stables operation and day rides are eliminated. The Wawona stock use campground (2 sites) is relocated to this area.	The stables operation and day rides are eliminated. The Wawona stock use campground (2 sites) is relocated to this area.	The stables operation and day rides are retained. The Wawona stock use campground (2 sites) is relocated to another area near the Wawona Maintenance Yard.	The stables operation and day rides are eliminated. The Wawona stock use campground (2 sites) is relocated to this area.
ONA-7-001	7	Wawona Campground: campground activity near river	The proximity of camp sites to the river causes trampling and riverbank erosion that inhibits riparian vegetation growth.		This campground contains 97 campsites, 96 sites and 1 groups site. No administrative campsites.	Retains 64 sites and one group site. Remove 32 sites that are either within the 100-year floodplain or in culturally sensitive areas.	Retains 69 sites and one group site. Remove 27 sites that are either within 150 feet of the river or in culturally sensitive areas.	Retains 69 sites and one group site. Remove 27 sites that are either within 150 feet of the river or in culturally sensitive areas.	Retains 83 sites and one group site. Remove 13 sites that are either within 100 feet of the river or in culturally sensitive areas.	Retains 83 sites and one group site. Remove 13 sites that are either within 100 feet of the river or in culturally sensitive areas.
REC-7-001	7	Wawona Swinging Bridge area	Access at the Wawona Swinging Bridge is not well-delineated. Visitors access the river through private property. There is a lack of public amenities such as toilets and waste disposal facilities.	Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.	Access at the Wawona Swinging Bridge is not well-delineated. Visitors access the river through private property. There is a lack of public amenities, such as toilets and waste disposal facilities.	(CTA) Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.	(CTA) Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.	(CTA) Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.	(CTA) Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.	(CTA) Provide access on the south side of the river on public land, delineating a trail and formal access that includes restrooms, waste disposal, and parking.
RES-7-001	7	CA-MRP-0374	Informal trails and hazard fuel buildup cause impacts to surface and sub-surface archeological resources at CA-MRP-0374.	Rehabilitate social trail and delineate access road.	Informal trails and hazard fuel buildup cause impacts to surface and sub-surface archeological resources at CA-MRP-0374.	(CTA) Rehabilitate social trail and delineate access road.	(CTA) Rehabilitate social trail and delineate access road.	(CTA) Rehabilitate social trail and delineate access road.	(CTA) Rehabilitate social trail and delineate access road.	(CTA) Rehabilitate social trail and delineate access road.
RES-7-002	7	CA-MRP-0008/H	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.	Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.	Informal trails and a variety of operational and visitor uses cause ground disturbing impacts to surface and sub-surface archeological resources at CA-MRP-0008/H.	(CTA) Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.	(CTA) Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.	(CTA) Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.	(CTA) Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Maintenance Yard.	(CTA) Remove informal trails. Relocate camp sites out of archeological site. Also, relocate the campground to the Wawona Stables.
RES-7-003	7	CA-MRP-0168/0329/H	Wawona Campground is potentially causing localized adverse effects to site CA-MRP-168/329/H (Camp A.E. Wood). Ground disturbing activities associated with foot traffic and camping cause impacts to shallow deposit of historic artifacts and features.	Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.	Wawona Campground is potentially causing localized adverse effects to site CA-MRP-168/329/H (Camp A.E. Wood). Ground disturbing activities associated with foot traffic and camping cause impacts to shallow deposit of historic artifacts and features.	(CTA) Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.	(CTA) Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.	(CTA) Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.	(CTA) Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.	(CTA) Remove 7 campsites from Wawona Campground that cause potential impacts to the archeological site.
RES-7-004	7	Wawona Golf Course and Golf Shop	Public comment has expressed both interest and concern with continuing to operate the Wawona golf course in a National Park.		The 9-hole golf course associated with the Wawona Hotel, and the retail and food service at the Golf Shop, would remain in use. Golf course removed (ecological restoration, spray field remains).	Golf course removed (ecological restoration, spray field remains) Wawona Golf Shop is repurposed.	Golf course removed (ecological restoration, spray field remains) Wawona Golf Shop is repurposed.	Golf course and Wawona Golf Shop remain.	Golf course and Wawona Golf Shop remain.	Golf course and Wawona Golf Shop remain.
RES-7-005	7	South Fork side channels: Abandoned infrastructure	Abandoned metal pipes in South Fork side channels dewater the terrace.	Remove abandoned pipes.	There is abandoned metal pipe in side channels on the South Fork Merced River that dewaters the terrace.	(CTA) Remove abandoned pipes.	(CTA) Remove abandoned pipes.	(CTA) Remove abandoned pipes.	(CTA) Remove abandoned pipes.	(CTA) Remove abandoned pipes.
RES-7-006	7	Wawona Campground: septic system	Wawona Campground is served by septic tanks and leach fields. When the capacity is exceeded (or ultimately fails) there is a potential for effluent to migrate into ground water and the river.	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 Campground is served by septic tanks and leach fields. When the capacity is exceeded (or ultimately fails), there is a potential for effluent to migrate into ground water and the river.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.

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RES-7-007	7	Wawona dump station: proximity to river	Wawona dump station is very close to the banks of the river.	Relocate the dump site to the Wawona Campground away from the 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 OHWM.	Wawona dump station is very close to the banks of the river.	(CTA) Relocate the dump site to the Wawona Campground away from the 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 OHWM.	(CTA) Relocate the dump site to the Wawona Campground away from the 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 OHWM.	(CTA) Relocate the dump site to the Wawona Campground away from the 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 OHWM.	(CTA) Relocate the dump site to the Wawona Campground away from the 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 OHWM.	(CTA) Relocate the dump site to the Wawona Campground away from the 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 OHWM.
RES-7-008	7	South Fork Wawona Picnic Area: Effects on Riparian Zone and Visitor Experience	The South Fork Wawona picnic area is not delineated and has no formal river access point. Visitors access the river by creating social trials.	Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.	The South Fork Wawona picnic area is not delineated and has no formal river access point. Visitors access the river by creating social trials.	(CTA) Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.	(CTA) Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.	(CTA) Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.	(CTA) Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.	(CTA) Delineate picnic area. Add formal river access point and path to river that encourages visitors to walk in the more resilient areas.
RES-7-009	7	Wawona Store Picnic Area: Effects on Riparian Zone and Visitor Experience	The Wawona Store Picnic Area near Pioneer History Center has visitor use levels during peak periods that exceed the design of the existing infrastructure. There is no formal river access point here, and visitor use at this steep riverbank has caused loss of riparian vegetation, social trailing, and riverbank erosion.	Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.	The Wawona Store Picnic Area near Pioneer History Center has visitor use levels during peak periods that exceed the design of the existing infrastructure. There is no formal river access point here, and visitor use at this steep riverbank has caused loss of riparian vegetation, social trailing, and riverbank erosion.	(CTA) Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.	(CTA) Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.	(CTA) Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.	(CTA) Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.	(CTA) Increase the number of picnic benches to accommodate more picnicking near the store. 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. Add path to river that encourages visitors to walk in the more resilient areas.
RES-7-010	7	CA-MRP-173/372/H	Wawona Hotel maintenance and usage includes impacts from construction, structures, roads, foot traffic on/off paths, parking, utilities, landscaping. Heavily eroded areas exist along river and creeks.	Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.	Wawona Hotel maintenance and usage includes impacts from construction, structures, roads, foot traffic on/off paths, parking, utilities, landscaping. Heavily eroded areas exist along river and creeks.	(CTA) Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.	(CTA) Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.	(CTA) Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.	(CTA) Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.	(CTA) Develop site management plan. Remove shoulder and off-road parking. Limit facility and concessionaire off -road vehicle travel/parking on hotel grounds.
RES-7-011	7	Wawona Stock Camp	The Wawona Stock Campground has two sites and is located in a very sensitive resource area.		The Wawona Stock Campground has two sites and is located in a very sensitive resource area.	Two stock use campground sites relocated from sensitive resource area to Wawona Stables.	Two stock use campground sites relocated from sensitive resource area to Wawona Stables.	Two stock use campground sites relocated from sensitive resource area to Wawona Stables.	Two stock use campground sites relocated to the Wawona Maintenance Yard area.	Two stock use campground sites relocated from sensitive resource area to Wawona Stables.
RES-7-012	7	CA-MRP-0171/172/254/516/H	Shoulder and off-road parking cause impacts to archeological resources on archeological site CA-MRP-0171/172/254/516/H.	Remove informal trails and shoulder and off-road parking.	Informal trails and visitor use cause ground disturbing impacts to surface and sub-surface archeological resources at CA-MRP-0218.	(CTA) Remove informal trails and shoulder and off-road parking.	(CTA) Remove informal trails and shoulder and off-road parking.	(CTA) Remove informal trails and shoulder and off-road parking.	(CTA) Remove informal trails and shoulder and off-road parking.	(CTA) Remove informal trails and shoulder and off-road parking.
RES-7-013	7	Wawona Hotel: Clark Cottage	The Wawona Hotel National Historic Landmark is overall in "good" condition. However, Clark Cottage is currently in "fair" condition overall, with contributing elements of the exterior of the building in "fair" to "poor" condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.	The Wawona Hotel National Historic Landmark is overall in "good" condition. However, Clark Cottage is currently in "fair" condition overall, with contributing elements of the exterior of the building in "fair" to "poor" condition.	(CTA) Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.	(CTA) Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.	(CTA) Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.	(CTA) Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.	(CTA) Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at Clark Cottage to bring the building to “good” condition.
RES-7-014	7	Wawona Hotel: Main Hotel, Manager's Cottage, Annex Building	The Wawona Hotel National Historic Landmark is overall in "good" condition. While the Main Hotel, Manager's Cottage, and Annex Building are currently in "good" condition overall, some contributing elements of the buildings are in "fair" to "poor" condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.	The Wawona Hotel National Historic Landmark is overall in "good" condition. While the Main Hotel, Manager's Cottage, and Annex Building are currently in "good" condition overall, some contributing elements of the buildings are in "fair" to "poor" condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.	Follow the recommendations from the Wawona Hotel Historic Structures Report (2012) to address contributing elements in “poor” condition at the Main Hotel, Manager's Cottage, and Annex Building to bring the buildings to “good” condition.
TRAN-7-001	7	Wawona Store/Gas Station Area	There is not enough parking in the Wawona Store area to meet the demand for the Mariposa Grove overflow parking. This has caused people to park between the store and Chilnualna Falls road is creating pedestrian/vehicle conflicts.	Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.	Parking between the store and Chilnualna Falls road is creating pedestrian/vehicle conflicts.	(CTA) Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.	(CTA) Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.	(CTA) Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.	(CTA) Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.	(CTA) Roadside parking between store and Chilnualna Falls Road removed. Day use parking remains, Mariposa Grove primary parking outside corridor, all shuttles remain, formalize parking for eight tour buses at Wawona Store.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
TRAN-7-002	7	Wawona Store: bus stop	The bus stop at Wawona Store was not designed (i.e., inadequate seating, no sun cover) to accommodate the volume and type of use it currently supports.	Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use	The bus stop at Wawona Store was not designed (i.e., inadequate seating, no sun cover) to accommodate the volume and type of use it currently supports.	(CTA) Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use	(CTA) Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use	(CTA) Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use	(CTA) Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use	(CTA) Re-design bus stop (for both tour buses and shuttles) to accommodate visitor use
NONE	AS	Re-introduce Declining Amphibian and Reptile Species	Of the 11 native amphibians found, four amphibian species have a federal or state special status due to population declines. The foothill yellow-legged frog (*Rana boylii*), which is a California Species of Concern, has not been documented in the park in many years and may be extirpated. Of the 22 native reptiles found, only one has a federal or state status. The Western pond turtle (*Actinemys marmota*), which is a California Species of Concern, is declining in the park due to habitat loss and non-native predators, such as bullfrogs.	In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.	In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed.	(CTA) In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.	(CTA) In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.	(CTA) In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.	(CTA) In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.	(CTA) In accordance with NPS Policy, management direction would continue toward removal of non-native species, and re-introduction of extirpated or declining species as priorities and opportunities are developed. Prioritize the study the Western pond turtle and foothill yellow-legged frog.
REC-AS-001	AS	boating, swimming and water play	Public comment has reflected both support for current and expanded boating opportunities as well as opposition to boating. Visitor use associated with boating has caused localized impacts to the riverbanks at the put-in and take-out, and allows easy access to sensitive riverbanks along the river.	Swimming and water play are allowed in all segments except Segment 6, impoundment.	Swimming and water play are allowed on all segments. Boating is allowed in Segment 2 between Stoneman Bridge and Sentinel Beach Picnic Area, and on the South Fork of the Merced between Swinging Bridge and the park boundary. During periods of high flows (> 6.5 feet at Sentinel Bridge,) boating in Segment 2 is prohibited for safety reasons.	Swimming and water play allowed in all segments except 6, impoundment. No permits required for private boating. No commercial boating. Boating allowed on all segments except 6, impoundment. Private use unlimited on Segment 1, 5, and 8. Private use limited to 25 trips per day in Segment 2 between the Pines Campgrounds and Sentinel Beach. 5 boats per day in Segment 3 and 5 boats per day in Segment 4. Raft put-in in Segment 2 at designated locations within Pines campgrounds and day use picnic sites; take out at Sentinel Beach.	Swimming and water play allowed in all segments except 6, impoundment. No permits required for private boating. No commercial boating. Boating allowed on all segments except 6, impoundment. Private use unlimited on Segment 1, 5, and 8. Private use limited to 50 trips per day in Segment 2 between Housekeeping Camp and Sentinel Beach. 5 boats per day in Segment 3 and 5 boats per day in Segment 4. Raft put-in Segment 2 located at Housekeeping Camp; take-outs at Sentinel Beach and Cathedral Beach.	Swimming and water play allowed in all segments except 6, impoundment. Permits required for private boating. Commercial boating by commercial use authorization. Boating allowed on all segments except 6, impoundment. Private use limited to 5 boats per day with backcountry permit on Segment 1, 5, and 8. Private use limited to 100 trips per day in Segment 2 between put in at Clark's Bridge and take out at Cathedral Beach. Private use limited to 10 boats per day in Segment 3 and 10 boats per day in Segment 4. Private use limited to 5 boats per day in Segment 7. Commercial Use Authorization for 75 boats at one time in Segment 2, between put-in at Housekeeping Camp West Beach and take-out at Sentinel Beach.	Swimming and water play allowed in all segments except 6, impoundment. Permits required for private boating. No commercial boating. Boating allowed on all Segments, except Segment 6, impoundment and 3, Gorge. Private use limited to 10 boats per day with backcountry permit on Segment 1, 5, and 8. Private use limited to 100 trips per day in Segment 2 between put in at Lower Rivers Day Use Area and take out at Sentinel Beach. Private use unrestricted on Segment 4. Private use limited to 10 boats per day in Segment 7.	Swimming and water play allowed in all segments except 6, impoundment. Permits required for private boating. Commercial boating by concessioner. Boating allowed on all Segments, except Segment 6, impoundment and 3, Gorge. Private use limited to 10 boats per day with backcountry permit on Segment 1, 5, and 8. Private use limited to 150 trips per day in Segment 2 between put in at Clark's Bridge and take out below Pohono Bridge. Private use unrestricted on Segment 4. Private use limited to 10 boats per day in Segment 7. Concessions contract for 100 boats at one time (~250 trips per day) in Segment 2, between put-in at Housekeeping Camp and take-out at Sentinel Beach.
RES-AS-001	AS	Abandoned underground infrastructure	Abandoned underground infrastructure such as remnants of former sewer treatment facilities, sewer and water line, and man holes can alter hydrology and lead to lowered water tables in meadows and wetlands.	Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and man holes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.	Abandoned underground infrastructure such as remnants of former sewer treatment facilities, sewer and water line, and manholes can alter hydrology and lead to lowered water tables in meadows and wetlands.	(CTA) Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and manholes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.	(CTA) Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and manholes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.	(CTA) Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and manholes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.	(CTA) Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and manholes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.	(CTA) Remove abandoned underground infrastructure that alters hydrology including remnants of former sewer treatment facilities, sewer and water line, and ma holes. Where infrastructure is removed or relocated and the area to be restored to natural conditions, soils will be decompacted and recontoured and the area revegetated with appropriate native plants. Individual actions will be subject to NHPA, Section 106 review.

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
RES-AS-002	AS	Informal trails	Informal trailing in meadows is common, particularly in Yosemite Valley. Informal trails lead to direct impacts such as soil compaction and vegetation trampling and may have indirect impacts such as changes to hydrology and soil moisture, a decrease in habitat quality, and the introduction of non-native species.	Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.	Informal trailing in meadows is common, particularly in Yosemite Valley. Informal trails lead to direct impacts such as soil compaction and vegetation trampling and may have indirect impacts such as changes to hydrology and soil moisture, a decrease in habitat quality, and the introduction of non-native species.	(CTA) Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.	(CTA) Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.	(CTA) Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.	(CTA) Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.	(CTA) Informal trailing will be removed and restored to natural conditions. Fencing and signage will be used to direct traffic to less sensitive areas that can accommodate some use without compromising meadow health. Through the use of closure signs, fencing, and/or other natural barriers such as rocks and logs these trails will be better defined and delineated. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants. Installation of fencing, signage, or boardwalks would not occur in areas of designated Wilderness.
RES-AS-004	AS	Eroded riverbanks	Heavy use of the riverbanks along some river reaches causes vegetation trampling and soil compaction which leads to riverbank erosion, degraded wildlife habitat and, potentially, river channel widening.	Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through 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—will be closed and restored. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings. Revegetate areas of denuded 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. Actions that could impact wilderness character, such as installation of fencing and signage, will not be taken in areas of designated Wilderness.	Heavy use of the riverbanks along some river reaches causes vegetation trampling and soil compaction which leads to riverbank erosion, degraded wildlife habitat and, potentially, river channel widening.	(CTA) Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through 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—will be closed and restored. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings. Revegetate areas of denuded 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. Actions that could impact wilderness character, such as installation of fencing and signage, will not be taken in areas of designated Wilderness.	(CTA) Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through 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—will be closed and restored. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings. Revegetate areas of denuded 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. Actions that could impact wilderness character, such as installation of fencing and signage, will not be taken in areas of designated Wilderness.	(CTA) Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through 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—will be closed and restored. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings. Revegetate areas of denuded 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. Actions that could impact wilderness character, such as installation of fencing and signage, will not be taken in areas of designated Wilderness.	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(CTA) Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through 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—will be closed and restored. Stabilize eroded riverbanks using bio-engineering techniques such as brush layering of willow cuttings. Revegetate areas of denuded 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. Actions that could impact wilderness character, such as installation of fencing and signage, will not be taken in areas of designated Wilderness.
RES-AS-005	AS	Riparian Protection Zone	The Park has not established an official riparian protection zone to protect water quality and riparian habitat. The lack of protection has led to impacts to aquatic and riparian habitat, soil erosion, and localized impacts to water quality.	Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100’ away from the ordinary high water mark.	There is no established riparian protection zone.	(CTA) Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high water mark.	(CTA) Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high water mark.	(CTA) Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high water mark.	(CTA) Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high water mark.	(CTA) Protect riparian zone from new development within 150 feet from the ordinary high water mark. Relocate or remove all campsites at least 100 feet away from the ordinary high water mark.
RES-AS-007	AS	Revetments: Project Level	Riprap impacts the hydrological ORV by preventing channel migration as well as the Biological ORV by inhibiting the establishment of riparian vegetation.	3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).	There are 15,589 feet of riprap along the bed and banks of the Merced River. Riprap is considered an impediment to free flow according to the Wild and Scenic Rivers Act, Some of rip-rap is needed to stabilize banks around critical infrastructure.	(CTA) 3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).	(CTA) 3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).	(CTA) 3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).	(CTA) 3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).	(CTA) 3,400 feet of riprap will be removed and revegetated with riparian species where needed. An additional 2,300 feet will be removed but replaced with bioconstructed riverbank stabilization (see map for precise locations).

Action Code	Segment	Project Name	Issue Statement	Common To All	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
RES-AS-009	AS	Revetments: Programmatic	Riprap impacts the hydrological ORV by preventing channel migration as well as the Biological ORV by inhibiting the establishment of riparian vegetation.	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.	There is riprap along the bed and banks of the Merced River, some of which is needed to stabilize banks around critical infrastructure.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.	(CTA) 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.
RES-AS-010	AS	Large Wood Management	Large wood has been removed from the river due to safety concerns and infrastructure protection for decades, particularly in the areas around the campgrounds and areas where rafting occurs.	Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.	Large wood has been removed from the river due to safety concerns and infrastructure protection for decades, particularly in the areas around the campgrounds and areas where rafting occurs.	(CTA) Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.	(CTA) Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.	(CTA) Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.	(CTA) Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.	(CTA) Manage large wood according to "Management of Fallen Trees in the Merced River in Yosemite Valley" policy, 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 constructed log jams in severely widened river reaches. Large wood would not be manipulated in designated Wilderness areas of the river corridor.
RES-AS-012	AS	Yosemite Valley: Informal trails	There are 8 miles of informal trails documented in Yosemite Valley meadows. These trails compact soils and fragment meadow habitat. Remove and restore six miles of informal trailing through meadows to natural conditions. 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.	Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.	There are 8 miles of informal trails documented in Yosemite Valley meadows.	(CTA) Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.	(CTA) Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.	(CTA) Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.	(CTA) Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.	(CTA) Restore 6 miles of informal trails. Remove informal trails by decompacting soils and filling ruts with native soils. Revegetate areas of denuded vegetation with appropriate native plants.
RES-MS-001	AS	Wawona: arch district impacts	Wawona archeological district is subject to impacts from park operations, visitor use, artifact collection, vandalism, and ecological processes.	(CTA) Increased 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.	(CTA) Increased 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.	(CTA) Increased 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.	(CTA) Increased 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.	(CTA) Increased 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.	(CTA) Increased 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.	(CTA) Increased 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.

APPENDIX L

DETERMINATION OF EXTENT NECESSARY

APPENDIX L

DETERMINATION OF THE EXTENT NECESSARY FOR COMMERCIAL SERVICES IN THE WILDERNESS SEGMENTS OF THE MERCED WILD AND SCENIC RIVER CORRIDOR

PART 1: INTRODUCTION

The vast majority of Yosemite National Park (95%) was designated as federally protected wilderness by the California Wilderness Act of 1984.[1] Congress delegated management responsibility for Yosemite Wilderness to the National Park Service (NPS). In furtherance of its wilderness management responsibilities, the NPS has adopted a trailhead quota system to limit overnight visitation, implemented an extensive educational program to teach visitors how to minimize their impacts, promulgated a variety of specific regulations that mandate low impact practices, and instituted numerous monitoring programs to assess wilderness character and track potential threats to that character.

The National Park Service has not yet completed an Extent Necessary Determination for commercial services for Yosemite's entire designated wilderness. The need for this type of specialized finding has only recently been articulated, stemming from a 2004 decision by the U.S. Court of the Appeals for the Ninth Circuit in the case *High Sierra Hikers Association v. Blackwell*.[2] In the *Blackwell* decision, the Ninth Circuit ruled that wilderness managing agencies must complete a specialized finding of necessity prior to authorizing commercial services in wilderness. This finding must be made after considering the extent to which commercial services are necessary to achieve the purposes for which the affected wilderness area was set aside. Congress directed that Yosemite's wilderness be set aside for recreational, scenic, scientific, educational, conservation, and historical use purposes. This document evaluates the necessity for commercial services for designated wilderness portions of the Merced River corridor in light of these purposes.

The most appropriate framework for completing an assessment of an Extent Necessary Determination for commercial services in wilderness is in the park's wilderness stewardship plan, where commercial services will be addressed comprehensively for Yosemite's entire wilderness. Yosemite National Park has appropriated funding for updating its Wilderness Stewardship Plan, and has begun the initial steps in the planning process. The plan, however, will not be ready for public review for several more years. Rather than await the development of a new Wilderness Stewardship Plan, the park has elected to analyze commercial services in the wilderness portions of the Merced Wild and Scenic River corridor at this time and provide the public with an opportunity to comment.

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1 California Wilderness Act, Public Law No. 98-425 (1984)

2 See, *e.g.*, *High Sierra Hikers Association v. Blackwell*, 390 F.3d 630 (9th Cir. 2004); *High Sierra Hikers Association v. Weingardt*, 521 F. Supp. 2d 1065 (2007).

PART 2: PURPOSE OF THIS EXTENT NECESSARY DETERMINATION AND RELATIONSHIP TO OTHER PLANS

The purpose of this document is to determine limits on commercial services in the wilderness sections of the Merced River Corridor in accordance with the requirements of the Wilderness Act *and* NPS wilderness management policies. The limits described in this document apply only to the wilderness segments of the Merced River corridor.

As noted above, the NPS is in the early stages of updating the park's Wilderness Stewardship Plan. Limits adopted in this Extent Necessary Determination will be revisited as part of the planning process for the Wilderness Stewardship Plan, which will determine the extent of commercial services necessary throughout all of Yosemite's designated Wilderness. There will be many opportunities for public involvement in the development of the Wilderness Stewardship Plan, including the ability to provide additional input on the amount of commercial services that should be authorized.

This Extent Necessary Determination is neither a formal element nor a required component of the Wild and Scenic Rivers Act as addressed in the Merced Comprehensive River Management Plan.

Under the Wild and Scenic Rivers Act, the NPS must adopt specific limits on use within the river corridor to ensure that the kinds and amounts of visitor use protect and enhance the river's outstandingly remarkable values, free flowing condition and water quality. The MRP's capacity determinations, then, represent the maximum amount of use that can be allowed without degrading river values. The user capacities that were established in the MRP planning process were incorporated into this Extent Necessary Determination. In sections 7 and 8 below, this document analyzes those capacities in accordance with the requirements of Section 4(d) of the Wilderness Act to determine the extent to which any portion of the MRP's numeric use limits should be allocated to commercial service users. This Extent Necessary Determination therefore tiers from the capacity determinations in the MRP.

PART 3: LEGAL FRAMEWORK FOR EVALUATING COMMERCIAL SERVICES IN WILDERNESS

A. The Wilderness Act

The Wilderness Act was passed in 1964 to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness."[3] Section 4(c) of the Wilderness Act explicitly bars "commercial enterprises within designated wilderness areas."[4] An exception to this ban, subject to limitations, is provided for commercial services such as guides and outfitters in section 4 (d) 6, which states that "commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other

[3] Wilderness Act, 16 USC 1131 (a)
[4] Wilderness Act, 16 USC 1133 (c)

wilderness purposes of the areas."[5] "Wilderness purposes" are defined in section 4 (b) of the Act as "recreational, scenic, scientific, educational, conservation, and historical use."[6]

The National Park Service has not issued regulations or formal policy guidance outlining the process for authorizing commercial services under Section 4(d) of the Act. However, the U.S. Court of Appeals for the Ninth Circuit has issued several decisions interpreting the restrictions on commercial activities found in Sections 4(c) and (d) of the Act. These decisions have informed the analysis in this Extent Necessary Determination.

In 2003, the Ninth Circuit, in *The Wilderness Society v. U.S. Fish & Wildlife Service*, examined the overall structure of the Act and found that the Act's broad mandate to protect wilderness areas was furthered by the prohibition provision found in Section 4(c), which among other things, prohibits commercial enterprises in wilderness. That prohibition, however, is qualified by the introductory language of Section 4(c) which states, "*Except as specifically provided for* in this [Act] … there shall be no commercial enterprise" within any wilderness area. (Emphasis added.) The exceptions to Section 4(c)'s prohibitions are found in Section 4(d), which is entitled "Special provisions." Of relevance here is the exception allowing for commercial services. The commercial services exception is limited in scope. Because of the Act's structure, in which there is a broad prohibition on commercial enterprise in Section 4(c) followed by a list of "special provisions" in Section 4(d), the Court concluded that the exceptions found in Section 4(d) are most properly read as a series of limited and express exceptions to the general prohibition found in Section 4(c) on commercial enterprises in wilderness.[7]

In 2004, the Ninth Circuit issued an opinion, *High Sierra Hikers Assn. v. Blackwell*, interpreting the commercial services exception found in Section 4(d)(6) of the Act. The Court examined the specific language of Section 4(d)(6), and in particular the language stating that commercial services may only be authorized "to the extent necessary," as well as relationship between Section 4(d)(6) and other provisions of the Wilderness Act. According to the Court, the phrase "to the extent necessary" imposed a requirement on wilderness managing agencies to make a "specialized" finding of necessity before authorizing commercial services in wilderness. In this specialized finding, the agency must "show that the number of permits [or other authorizations] granted was no more than was necessary to achieve the goals of the Act." Although it determined that a specialized finding is required, the Court recognized that the Wilderness Act is "framed in general terms and does not specify any particular form or content" for the specialized finding. Moreover, the Court recognized that wilderness managing agencies are charged with diverse and sometimes conflicting mandates under the Act. Agencies are obligated to protect and preserve wilderness areas, but the Act also embraces competing directives such as those related to the provision of opportunities for public recreation and the discretion to take actions to manage fire and insect risks.[8]

This Extent Necessary Determination follows the direction provided by these Court opinions. In the sections that follow, we identify the types of "activities which are proper for realizing recreational and other wilderness purposes" and then determine the numeric amount of commercial services that are

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5 Wilderness Act, 16 USC 1133 (d) (5)
6 Wilderness Act, 16 USC 1133 (b)
7 *The Wilderness Society v. U.S. Fish & Wildlife Service*, 252 F.3d 1051, 1062 (en banc) (2003)
8 *High Sierra Hikers Assn. v. Blackwell*, 390 F.3d 630 (9th Cir. 2004)

necessary to realize these purposes, ensuring that the number authorized is no more than necessary so that wilderness character will be preserved.

B. NPS Wilderness Management Policies

Commercial services must be consistent with the application of the minimum requirement concept and with the objectives of the park's Wilderness Management Plan.[9] See Section 9 of this document for the application of the minimum requirement concept for commercial allocation.

C. Yosemite Wilderness Management Plan

The Yosemite Wilderness Management Plan states that commercial packers "…may be restricted to designated park areas."[10]

PART 4: USER CAPACITY IN WILDERNESS

In the Yosemite Wilderness, wilderness character is preserved in part through the use of the trailhead quota system, which limits the amount overnight visitation through the use of a wilderness permit system. In order to preserve wilderness character, NPS must ensure that natural resources are protected from damage that can result from overuse, and that outstanding opportunities for solitude are preserved.

The Yosemite trailhead quota system was developed in the 1970s, prior to wilderness designation.[11] The backcountry area of the park was divided into travel zones. For each zone a capacity was set based on the number of acres and miles of trails and desired sociological densities for campsites and trails. The capacities were then adjusted to protect ecological resources. For example, capacities were adjusted in zones with ecosystems that were rare or vulnerable (such as those with subalpine meadows), or that exhibit fragility or limited resilience following impacts (such as those with alpine meadows). Zone capacities have been adjusted periodically to reflect new or changed scientific findings regarding ecosystem health and the effect of patterns of visitor use on resources.

In concert with these zone capacities, the NPS has implemented a trailhead quota system. This type of system requires beginning a trip at a certain trailhead on a certain day, but otherwise does not generally restrict travel plans. Visitor travel patterns were studied to determine the relationship between the various trailheads and the travel zones.[12] By studying wilderness visitation travel patterns, managers were able to determine the percentage of visitors to each zone that are attributable to each trailhead. By limiting the number of individuals who may enter the wilderness from a given trailhead

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9 NPS Management Policies 2006 6.4.4.

10 National Park Service, Wilderness Management Plan, 1989, pg. 21

11 van Wagtendonk, J. W. 1979. A conceptual backcountry carrying capacity model. Proc. 1st. Conf. Sci. Res. in the nat'l. Parks. USDI, Nat'l. Park Serv. Trans. and Proc. Series 5:1033-1038.

12 van Wagtendonk, J.W., and J. M. Benedict. 1980.Wilderness permit compliance and validity. J. Forestry 78(1): 399-401; van Wagtendonk, J.W., and P. R. Coho. 1986. Trailhead quotas: rationing use to keep wilderness wild. J. Forestry 84(11): 22-24.

on a given day, managers limit the number of visitors to each zone such that the wilderness character of the zone, including both the physical resources and the outstanding opportunities for solitude are maintained in accordance with law.

As part of the Merced River Plan, the NPS reevaluated the wilderness zone capacities within the Merced River Corridor in light of the Wild and Scenic Rivers' Act mandate to protect and enhance Outstandingly Remarkable Values and the river's free-flowing condition. The zone capacities adopted for the river corridor guided the Extent Necessary Determination process. For six of the eight zones that include the Merced River corridor, the zone is much larger than the corridor. This extent necessary determination is for the full geographic extent of all eight zones rather than just the corridor. In addition to the use limits set by the trailhead quota system additional limits that relate to wilderness will be in place under the Merced Wild and Scenic River Plan. For example, a capacity on grazing nights for pack stock is being established for the meadow near the Merced Lake Ranger Station.

PART 5: DEFINITIONS

A. Definition of Proper Activities

Section 4 (d) (6) only allows commercial services which are "proper for realizing the recreational or other wilderness purposes of the areas." Not all activities are proper or allowable in wilderness areas. Section 4(c) of the Wilderness Act prohibits public use of motor vehicles, other forms of mechanical transport, motorized equipment, and landing of aircraft.[13] The 2006 Management Policies provide additional guidance on the types of activities that are proper in park wilderness areas. NPS policy states that recreational uses in wilderness will be of a nature that:

- Enables the areas to retain their primeval character and influence;
- Protects and preserves natural conditions;
- Leaves the imprint of man's work substantially unnoticeable;
- Provides outstanding opportunities for solitude or primitive and unconfined types of recreation; and
- Preserves wilderness in an unimpaired condition14.

These restrictions apply equally to commercial and noncommercial public use. In the Yosemite Wilderness, proper activities are those traditionally associated with wilderness recreation, including hiking, backpacking, stock use, rock climbing, photography, nature study, and others. Improper (and illegal) activities include snowmobiling, mountain biking, skateboarding, and others. For a commercial service to be considered, it must first be related to an activity that is proper in wilderness. Therefore, the only commercial services considered in this document are those related to the types of activities found to be proper in Yosemite wilderness.

[13] 16 USC 1133 (c).
[14] NPS Management Policies 2006, 6.4.3.

The Wilderness Act directs that wilderness areas be administered "so as to provide. . .for the gathering and dissemination of information regarding their use and enjoyment as wilderness"[15] The making of films in wilderness is considered proper for realizing the educational and scenic purposes.

B. Definition of Commercial Services

Before the National Park Service can determine the types of commercial services that are necessary to further wilderness purposes, we must first determine which services are commercial in nature and which are not. The Wilderness Act does not define the term "commercial service." When Congress has failed to include definitions of important terms in a statute, agencies may rely on commonly accepted definitions. The word "commercial" is commonly defined as (1) "[o]f or relating to commerce," *i.e.*, "[t]he buying and selling of goods, esp. on a large scale: business," (2) "[e]ngaged in commerce," (3) "[i]nvolved in work designed or planned for the mass market," or (4) [h]aving profit as a primary aim."[16] The word "service" is commonly defined as, "the organized system of apparatus, appliances, employees, etc., for supplying some accommodation required by the public" or "the performance of any duties or work for another; helpful or professional activity."[17] Activities that are necessary and proper for realizing wilderness purposes will be evaluated to determine whether they reflect consistent, commonly understood usage of the terms "commercial" and "services."

In addition, our determination as to what constitutes a "commercial service" is guided by an analysis of the primary purpose and effect of each service. This further layer of analysis, focused on purpose and effect, is supported by judicial precedent.[18] While some services are conducted for more than one purpose and may have more than one effect, the focus of our analysis is on ascertaining the primary reason for the service. Incidental or subsidiary purposes and effects do not dictate that a service be categorized as commercial.

For purposes of this document, **a commercial service is one that relates to or is connected with commerce wherein work is performed for another person or entity, if the primary purpose is the experience of wilderness through support provided for a fee or charge and if the primary effect is that the wilderness experience is guided and shaped through the use of support services provided for a fee or charge**.

The form of the organization providing the service is also not dispositive of whether the organization is offering a commercial service, for example whether it is a non-profit or not-for-profit. Rather, the definitions above, including an analysis of the activity's purpose and effect, will guide a determination of whether a service is commercial or not.

Commercial services may be authorized under a number of different legal authorities, using a number of different instruments. Of relevance to designated wilderness areas within Yosemite National park are concession contracts, commercial use authorizations, and special use permits.

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15 Wilderness Act, (16 USC 1131 (a)).
16 Webster's II New College Dictionary 225 (1995); *accord* Merriam-Webster's Collegiate Dictionary 230 (2000). *See Wilderness Society v. U.S. Fish and Wildlife Service*, 353 F.3d. 1051, 1061 (9th Cir. 2003)
17 www.dictionary.com.
18 *Wilderness Society v. U.S. Fish and Wildlife Service*, 353 F.3d. 1051, 1061 (9th Cir. 2003).

1. Authorization Mechanisms for Commercial Services

a. Concessions Contracts and Commercial Use Authorizations:

Services authorized under concessions contracts and commercial use authorizations are considered commercial services because the entities holding these authorizations are businesses engaged in commerce, they provide a service to the public, members of the public who use these services experience Yosemite wilderness directly as a result of this commercial support, and employees of the concessioner and CUA holder direct and guide the wilderness experience of the trip participants. CUAs holders who lead either stock or hiking trips (hiking trips include those that focus on fishing, photography, Nordic skiing, and other appropriate activities which do not involve stock transport or technical climbing) are considered providers of commercial services, as is the primary park concessioner, which leads stock, hiking, and climbing trips in wilderness.

b. Special Use Permits:

Special Use Permits are used to authorize a wide range of activities, many of which are not commercial. Because Special Use Permits are issued on a case by case basis, it is not possible to evaluate all of the different activities that might be requested in a special use permit in advance; however, commercial filming permits (one type of Special Use Permit) are discussed below. When a request for another type of Special Use Permit in wilderness is received, it will be evaluated in accordance with the criteria above to determine whether the activity constitutes a commercial service. If it does, a permit will only be authorized in accordance with the procedures set out below in Sections 8.

2. Application of the Purpose and Effect Analysis

For the majority of traditional wilderness outfitting and guide services the determination of commerciality is straightforward. The commerciality of some uses is not as clear, however, and those uses are analyzed here.

a. Scientific Research:

Scientific research performed by faculty, postdoctoral fellows, or students enrolled in degree-granting programs in accredited colleges and universities or holding appointments with governmental agencies or scientific research institutions, even when accompanied by pack stock support, will typically not be considered commercial. Research trips using pack stock support would normally not be classified as a commercial service trip because the primary purpose and effect of the trip is the enhancement of scientific understanding of park resources, not commercial interests. The NPS will review requests for scientific research permits that involve the support of commercial outfitters to determine whether the trip is commercial. In the event that a research trip is categorized as a commercial service, it will be allowed in accordance with the procedures set out below in Sections 8.[19]

[19] Some scientific research could involve a commercial component if it contained an element of "bioprospecting." Any such proposals will be reviewed for legality under the Wilderness Act and commerciality under the guidelines noted above.

b. Commercial Filming and Photography:

The NPS allows commercial filming and photography in national parks provided that there would not be a likelihood of resource damage, an unreasonable disruption of the public's use and enjoyment of the site, or a health or safety risk to the public.[20] Filming involves movement or motion of the subject whereas photography does not. The NPS Management Policies define "commercial filming" as "filming that involves the digital or film recording of a visual image or sound recording by a person, business, or other entity for a market audience." All commercial filming is subject to permitting requirements, and is limited to projects that are necessary or proper for providing educational information about wilderness uses, resources or values, or necessary for other wilderness purposes. Still photography is only subject to permitting requirements if it takes place in areas not open to the public, involves the use of models or props that are not part of the location's existing setting, or requires NPS oversight. Based on the NPS policy cited above, all commercial filming and photography will be treated as a commercial service.

c. Trips by Educational Institutions:

Each year, the park receives requests for wilderness trips by student groups from accredited educational institutions which are conducting classes for course credit. These institutions range from elementary, middle and high schools to colleges and universities. The goal of these trips is to provide environmental education to students and to foster self-reliance and other qualities. In some cases, employees of the educational institution guide the trip. In others, the school retains the services of an institution with expertise in environmental education. NatureBridge, a park partner whose mission is environmental education, leads many trips of this type (A small percentage of NatureBridge's trips are not for academic credit and are considered commercial). Trips by accredited academic institutions which give course credit for completion, even if accompanied by Yosemite Institute or a similar organization, are not considered commercial services for the purposes of this Extent Necessary Determination. The primary purpose and effect of these trips is fulfilling academic goals for the students involved. The students' experience is guided and shaped by the institution's academic goals. Support services from environmental education organizations like NatureBridge do not change the essential character of the trip, which is academic not commercial.

C. Definition of Wilderness Purposes

1. Recreation

All visitors to the Yosemite Wilderness help to realize the recreational purpose. The recreational purpose is realized when people are engaged in proper activities in wilderness. Those activities are described in Section 5.A above. Hiking, backpacking, horseback riding, fishing, climbing, nature study, and mountaineering are just a few examples of the many ways that visitors help to realize this purpose. Yosemite National Park does not allocate capacity to particular wilderness recreational activities.[21]

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[20] U.S.C. §460l-6d

[21] This approach is reaffirmed by a recent district court ruling which stated: "…neither fishing nor any other particular activity is endorsed by the Wilderness Act, nor is the enhancement of any particular recreational potential a necessary duty of wilderness area management." *High Sierra Hikers Assn. v. U.S. Forest Service*, 436 F.Supp.2d 1117, 1144 (E.D. Cal. 2006).

2. Education

While many wilderness visitors are engaged in some type of informal, self-directed education, formal education is also necessary to realize the educational purpose.

Examples of formal education that realize the educational purpose of wilderness include, but are not limited to the following:

"How to" education on such topics as:

- Equipment selection
- Navigation
- Wilderness first aid
- Travel and camping skills

More advanced "skills" training on such topics as:

- Rock climbing
- Mountaineering
- Backcountry skiing

Coursework on wilderness values, ethics or philosophy including:

- Natural history
- Human or cultural history
- Wilderness values
- Environmental social or political history
- Environmental philosophy

Coursework on scientific aspects of wilderness, such as:

- Biology
- Geology
- Zoology
- Fire ecology

Programs specifically designed to teach residents of urban areas, particularly youth, wilderness skills, including:

- Self reliance
- Survival
- Independence
- Physical fitness and agility
- Mental toughness
- Problem-solving
- Adaptability

Making of educational films about wilderness, including but not limited to those about wilderness:[22]

- Wilderness values
- Natural history
- Human or cultural history
- Famous wilderness defenders such as John Muir
- Endangered species preservation
- Instructional films covering wilderness skills and techniques

Exception:

- Leave No Trace training is considered a fundamental prerequisite for all wilderness visitors and as such will *not* be considered formal education.

3. Scenic

Wilderness possesses a particular type of scenery-natural and untrammeled. The scenic purpose is realized when visitors observe the natural landscape of wilderness. It is also realized when people take photographs of scenery and share them with others outside of the wilderness. As with the educational purpose, however, there is a more formal appreciation of scenery that is enjoyed by photographers and other artists. Commercial services provide necessary support for this purpose if they offer photography, painting, or even writing workshops that focus on appreciating and interpreting the scenery. Commercial filming, videography, audiography, and photography also realize the scenic purpose if they focus on wilderness scenery and soundscape.

4. Conservation

Conservation means actions that help to maintain the wilderness in a largely natural and untrammeled state, with native biodiversity intact and natural processes uninterrupted.

Examples of activities in wilderness that help to realize the conservation purpose include, but are not limited to:

- Ecological restoration projects
- Trail building and maintenance
- Species preservation activities
- Eradication or removal of non-native invasive species

Realizing the conservation purpose is primarily an agency responsibility. Occasionally a visitor group conducts a "service trip" that includes conservation work. In Yosemite, however, these groups are not able to work independently of NPS control and supervision. They are designated as volunteers, and are thus agents of the National Park Service. This purpose is realized by the agency, not by commercial

[22] Films focused on displaying scenic beauty rather than providing education on a topic may more properly be considered to fulfill the "scenic" purpose described below at Section 5.B.3.

services. If the primary purpose of the service trip is to construct, implement or maintain a conservation project, then the purpose and effect is non-commercial.

5. Historic

"Historic uses" are defined as those uses which emphasize the wild, untrammeled, and natural character of the land in its historic state. Visitors help to realize the historic purpose when they encounter the land as did those of earlier historical periods. The historic purpose is realized by maintaining the wilderness character of the land, by primitive recreation in the wilderness, by the provision of opportunities for solitude, and by enjoying the scenic wonders of the natural and untrammeled landscape. The realization of this purpose is consistent with the realization of the conservation and recreational purposes.

The courts have directly addressed the meaning of "historic uses" as used in the Wilderness Act, and have uniformly construed "historic use" to mean use of the primeval or ancient wilderness in its natural state. The U.S. Court of Appeals for the 11th Circuit found that "the only reasonable reading of "historical use" in the Wilderness Act refers to experiencing the natural, rather than man made, features."[23] This decision was followed by the district court in Olympic Park v. Mainella, which held that:

> [t]he Park Service references the historic pattern of shelter construction and recreational use in concluding that the "setting, association, and feeling are significant aspects of historic use within the park" (AR 416-17), but while this may be true, this type of usage is in the past and a new value has been placed on the land by the creation of the Olympic Wilderness....a different "feeling" of wilderness is sought to be preserved for future generations to enjoy, a place "where the earth and its community of life are untrammeled by man" and which retains "its primitive character and influence."[24]

Thus, "historic use" refers to preserving the wilderness character of the land so that each visitor may encounter it in its historic state, as undeveloped as it was when modern humans first experienced it. No commercial services are necessary for the realization of the historical purpose because its realization is congruent with the realization of the conservation purpose.

6. Scientific

The natural and untrammeled qualities of wilderness make an area valuable to science. Realizing the scientific purpose means allowing scientific research and monitoring to take place in wilderness. Unlike conservation activities, scientific activities fall on a spectrum from administrative to independent: Some are conducted by the agency, some are conducted by academics but sponsored or overseen by the agency, and some are conducted by independent academics or graduate students. Research conducted by or for the NPS is considered administrative, not commercial. On rare occasions an independent researcher might require commercial services to pack in supplies. However

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[23] *Wilderness Watch v. Mainella*, 2004, need correct cite format, followed by *Olympic Park Associates v. Mainella*, 2005 WL 1871114 (D. Wash. 2005)

[24] *Olympic Park Associates v. Mainella*, 2005 WL 1871114 (D.Wash. 2005)

as discussed above in Section 5, the incidental use of pack services to support a research trip typically would not convert a research trip into a commercial service.

In the Yosemite Wilderness, research is reviewed by an interdisciplinary permit committee and limited though a process articulated in *An Interagency Framework to Evaluate Proposals for Scientific Activities in Wilderness*.[25] This framework, including the application of the minimum requirement concept, provides methods to quantify the impacts and benefits of research, compare costs and benefits, and prioritize research proposals.

PART 6: EXTENT NECESSARY DETERMINATION

This section describes the thresholds and methods used to determine limits on commercial services in the wilderness portions of the Merced River corridor. As noted above, no commercial services are needed for the realization of the historic, scientific, or conservation purposes. All proposed commercial trips in wilderness will be assessed to see which purposes they fulfill (see section on the application process, below).

A. Overnight Use

The wilderness portions of the Merced River corridor are overlaid with eight wilderness management zones. Each zone has an established capacity and trailhead limits are enforced. The extent necessary determination for overnight trips analyzes use in each zone by month.

1. Recreational Purpose

Under the Wilderness Act, the NPS can only authorize commercial services in wilderness if they are necessary to realize wilderness purposes. Therefore it is important to understand the amount of non-commercial use that is occurring in relation to established capacities. If a wilderness zone is substantially full with noncommercial visitors, then commercial visitors are not needed to realize the recreational purpose. To determine whether an area is "substantially full," the following method is used:

Each zone is accessed by a number of trailheads, each with a daily quota for overnight use (see capacity discussion above in Part 4). For each zone, permit records for all trailheads that provide more than 10% of the overnight visitors to that zone are tallied (minus permits for commercial groups) and compared to the trailhead quotas. The number of days per month that those trailhead quotas are at least 90% full is tallied. Those days are considered "full." 90% was chosen instead of 100% because visitors are frequently turned away before 100% of the quota is reached-for example, if only one spot is left, groups of two or greater will be turned away. On many days reserved permits are cancelled, or groups with a reservation arrive with a smaller group than planned. When this happens late in the day, utilization is slightly less than the quota even though many groups may have been turned away.

[25] See Landres, P., Fincher, M., Sharman, L., et al, *An Interagency Framework to Evaluate Proposals for Scientific Activities in Wilderness*, 2009 at wilderness.net/toolboxes.

This analysis is done by month, using a five year average of wilderness permit data from 2005-2009. If a zone is "full" more than 66% of the days in a month, that zone is considered substantially full, and will be considered a "restricted" zone. Those zones where the trailheads serving the zone are full 33% to 65% of the time are "weekend restricted" zones. Typically the full days fall on weekend nights, with Fridays and Saturdays the most likely to be substantially full.

Webster's Dictionary defines "realized" as "to bring into concrete existence." It is not necessary that a zone be filled to capacity in order for the recreational purpose of that zone to be realized. However, "realization" implies a level of "concrete" use beyond the minimum. Many zones are popular destinations with great demand for access from both the public and commercial outfitters. A zone threshold of 66% for "realization" of the recreational purpose means that all wilderness permits for that zone are issued 4.6 days per week throughout the month. This means that every weekend and holiday as well as many weekdays is filled to capacity for that zone. Additionally, in many popular zones even those days on which utilization falls below 90% it often exceeds 80%. This means that the overall percentage of a quota utilized for a given month may be significantly higher than the percentage of "full" days. The level at which a purpose is realized necessarily entails an exercise of management judgment. This definition of "realization" balances the competing factors of access for commercial recreational groups against the overall preference expressed in the Wilderness Act for noncommercial recreational visitation.

A zone threshold of 33% to 65% for a "weekend restricted" zone means that this zone is filled to capacity between 10 and 19 days per month. This means that every weekend and holiday is filled to capacity for that zone. Noncommercial public recreational demand is dramatically increased on weekends. The "weekend restricted" designation maintains commercial recreational access to desirable areas by permitting it on weekdays, when it helps realize the recreational purpose, while maximizing noncommercial recreational access on weekends.

The results of the overnight commercial recreational capacity analysis are shown on map 1. Overnight commercial groups will be allowed to travel through restricted or weekend restricted zones as long they spend the night outside of such zones.

2. Educational Purpose

The educational purpose is considered realized when there are opportunities for both informal and formal education taking place in the wilderness. Informal education is self-directed learning available to all wilderness visitors. The realization of the "informal" component of the educational purpose can be considered as numerically congruent with the realization of the recreational purpose: All those who are recreating are in some way engaged in informal education. Directed, formal education is also a proper activity in wilderness and also realizes the educational purpose. Formal education presented by a qualified instructor can promote a deeper, more comprehensive understanding of wilderness related subjects. An allocation of 10% of capacity is necessary to ensure that there is sufficient opportunity for formal education and classes, including the making of educational films. Trips that realize the educational purpose also, by definition, also realize the recreational purpose and therefore educational trips in excess of 10% of capacity would be allowed in non-restricted zones to help realize the recreational purpose.

The percent of capacity allocated to formal education is small for a number of reasons:

- The educational purpose is largely being realized through informal education
- NPS Management Policies directs that ". . . the service will, to the extent practicable, afford visitors ample opportunity for inspiration, appreciation, and enjoyment through their own personalized experiences-without the formality of program or structure."[26]
- Commercial educational use in restricted and weekend-restricted zones will displace non commercial use. Under the overall structure of the Wilderness Act, denial of access to non commercial visitors in favor of commercial visitors should be minimized.

Classes offered by accredited schools for which students receive academic credit are not considered commercial and are not restricted by this allocation (see section 5).

For restricted zones, and weekend restricted zones on weekends, formal education conducted by noncommercial entities such as the NPS, and accredited schools, colleges, and universities conducting classes for academic credit is also realizing the educational purpose, and will first be subtracted from that 10% of capacity. The remaining allocation, if any, will be available for commercial formal education in order to realize the educational purpose.

3. Scenic Purpose

All visitors are engaging in informal appreciation of wilderness scenery, as are individuals located outside of wilderness who are looking in from a road or other developed area. Formal appreciation of wilderness scenery, such as art and photography workshops, can foster a more structured understanding of scenery and is also necessary to realize a purpose of the Wilderness Act. An allocation of 5 % of capacity is necessary to ensure that there is sufficient opportunity for formal appreciation of wilderness scenery, including the making of films that focus on wilderness scenery. Trips that realize the Scenic purpose also, by definition, also realize the recreational purpose and therefore Scenic trips in excess of 5% of capacity would be allowed in non-restricted zones to help realize the recreational purpose.

The percent of capacity allocated to formal appreciation of scenery is small for a number of reasons:

- The scenic purpose is largely being realized through informal appreciation, both inside and outside of wilderness
- Policy guidance, noted above, that directs that non-formal opportunities be "ample."
- Commercial scenic use in restricted and weekend-restricted zones will displace non commercial use. Under the overall structure of the Wilderness Act, denial of access to non commercial visitors in favor of commercial visitors should be minimized.

Art and photography classes offered by accredited schools for course credit are not considered commercial and are not restricted by this allocation (see section 5).

[26] NPS Management Policies 2006 8.2

B. Day Use

The only significant day use in the Merced River Corridor is in the Little Yosemite Valley area. Nearly all of this day use is on the one mile section of the John Muir Trail from the top of Nevada Fall to where the trail leaves the corridor near the designated camping area. An analysis of commercial use from 2005-2009 shows that all commercial day use in the corridor was limited to hikes to Half Dome. That use has already been limited through an Extent Necessary Determination for the Half Dome Stewardship Plan. That plan limits commercial day use to a maximum of 30 people per day for trips that realize the educational purpose and 15 people per day for trips that realize the scenic purpose. Those limits are appropriate for realizing the educational scenic purposes of wilderness in the Merced River corridor while protecting other wilderness values.

C. High Sierra Camps

In 1984, when Congress designated the Yosemite Wilderness, it allowed the continuation of the High Sierra Camps as a non-conforming use and designated the immediate areas of the camps as potential wilderness additions. The only High Sierra Camp in the Merced River corridor is Merced Lake.

The camps are a commercial operation and offer seasonal, rustic accommodations. Under the preferred alternative of the Draft Merced River Plan the Merced Lake High Sierra Camp will provide 42 guest beds, offer full meal service to guests, and sell sundry items to both camp guests and other visitors. It is typically open from early July to early September. The National Park Service, in conjunction with the concessioner, conducts commercial educational "loop trips" to the High Sierra Camps and provides formal interpretative educational programs to both High Sierra Camp guests and backpackers from nearby campgrounds.

The Merced Lake High Sierra Camp is a substantial commercial presence and affects the wilderness experience of visitors in the area, as do the visitors, employees, support personnel, and supply trips going to and from the camp. The nature of the camp, with a nonconforming level of development and services, means that the Merced Lake zone is highly commercialized compared to those zones that have only more traditional, conforming outfitter and guide services. To prevent further commercialization of this area, the Merced Lake zone will be managed as "restricted" during July and August when the camp is open, and the commercial formal education provided by the NPS-concession loop trips will be subtracted from the overnight use allocations for such use, as well as noncommercial educational use.

D. Disabled Access

NPS Management Policies states that the agency must "make available equal opportunities for people with disabilities in all programs and activities."[27] For some people who are mobility impaired, commercial stock services may provide the only reasonable way to access the wilderness. This Extent Necessary Determination only prohibits some types of commercial use in two wilderness management

[27] NPS Management Policies 6.4.10

zones (there are 53 such zones in the entire wilderness; 8 in the Merced River corridor) for a part of the use season. Like persons without mobility impairments, mobility impaired visitors may not be able to gain access to their preferred destination as part of a commercial trip during the restricted period. However, Yosemite has many other areas where visitors can take stock-assisted trips. As such, there are "equal opportunities" for mobility impaired individuals to use commercial stock trips to visit the Yosemite Wilderness.

E. Other Commercial Use Limits

In order to honor the clearly expressed legislative intent in the Wilderness Act to limit commercialization of wilderness, and the legislative mandate to permit commercial use only to the extent necessary to realize the wilderness purposes, the following policies will be implemented:

- In the Yosemite Wilderness, off-trail areas are managed to provide outstanding opportunities to enjoy solitude as well as a more pristine natural environment: Group size is limited to eight instead of fifteen to provide enhanced opportunities for solitude, and stock use is generally prohibited to prevent stock impacts in areas without the protection of properly designed and hardened trails. Off-trail areas in the Merced River Corridor zones of the Yosemite Wilderness will be commercial-free areas. No commercial use will be allowed more than ¼ mile from a maintained trail, authorized cross country stock route, or public access road (as shown on the latest version of U.S.G.S. topographic maps.)

- Overnight commercial trips are limited to two per zone per night. There are three reasons for this limit. First, this limit is necessary to protect areas from impacts due to displacement from restricted and weekend restricted zones. Such displacement, if not properly managed, could result in undesirable physical impacts from grazing or from the creation of new campsites large enough to accommodate large commercial groups of 12-15 people, as well as the social impacts of increased numbers of large groups. Second, this limit will help to prevent "harmful spikes in use"[28] and protect the wilderness character of areas to which commercial use may be displaced under the operation of this plan.[29] If three or more large commercial groups are all displaced to the most desirable unrestricted zone, it could create crowding that detracts from the wilderness experience of noncommercial visitors sharing a zone with such groups.[30] A limit of two commercial trips per day in unrestricted zones will prevent this from occurring. Third, this limit will prevent commercial groups from dominating any one area and therefore further the intent of the Wilderness Act.

These limits apply in all zones at all times in addition to the other restrictions noted above.

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[28] *See High Sierra Hikers v. Blackwell*, 390 F.3d 630 (9th Cir. 2004): *High Sierra Hikers Association v. Weingardt*, 521 F. Supp. 2d 1065 (2007) (holding invalidates the USFS commercial use needs assessment in part because it failed to control harmful spikes in use).

[29] For a review of the research demonstrating that harms caused by new impacts to areas not previously impacted are more extensive than harms to previously impacted areas (the "impact curve"), see Hammitt, W. & Cole, D. (1998) Wildland Recreation: Ecology and Management, 2d ed., New York: John Wiley

[30] Recent empirical research on visitor experience in the Yosemite Wilderness has documented a visitor preference not to encounter stock parties and large campsites. See Newman, P., Manning, R. E., Dennis, D. F., & McKonly. (2005). Informing carrying capacity decision making in Yosemite National Park, USA using stated choice modeling. Journal of Park and Recreation Administration, 23(1), 75-89.

PART 7: EXTENT NECESSARY CALCULATIONS FOR THE MERCED RIVER CORRIDOR

The following is an application of the rules in Part 7 to the wilderness portions of the Merced River corridor. They apply only to the Merced River corridor, and do not apply to commercial use associated with the High Sierra Camps. The allocations are summarized in Table 1. Some trips may realize all three purposes. Such trips will be allocated according to the purpose allocation that is most favorable to the commercial service provider.[31]

A. Limits on all Commercial Use:

- No camping or travel by commercial groups allowed more than ¼ mile from a maintained trail or public access road. No camping allowed in the Mount Lyell zone (The entire zone is off trail.) No more than two overnight commercial groups per night per zone.

- All commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of 3 persons (including employees), only two pack animals are allowed in addition to 3 riding stock. See section 9 B.

B. Limits on Commercial Trips that only Realize the Recreational Purpose:

1. Overnight Use

- Restricted zones (LYV, June, July and August only; Merced Lake, July and August only): No overnight commercial use allowed.

- Weekend restricted zones (LYV, May and September only; Merced Lake, September only): Commercial use allowed on weekdays; but prohibited on weekends and holidays. (This means no overnight stays on Friday and Saturday nights or Sunday night before a Monday holiday. July 4th will only be treated as a holiday during years when the federal holiday forms a three day weekend.

- Commercial trips allowed in the Washburn Lake, Clark Range, South Fork, Johnson Creek, and Chilnualna Creek zones all year. Commercial trips allowed in the LYV zone October through April and the Merced Lake zones October through June.

[31] Such trips are also favorably evaluated under the minimum requirements analysis described in section 9 below because they help to realize multiple purposes at a lower impact than would multiple trips.

TABLE 1. COMMERCIAL RESTRICTIONS SUMMARY

Overnight Use			
	Other Zones	Weekend Restricted Zones	Restricted Zones
For commercial groups that realize:	• Washburn Lake, Clark Range, South Fork, Johnson Creek, and Chilnualna Creek • LYV zone October through April and the Merced Lake zones October through June	• LYV, May and September only; Merced Lake, September only	• LYV, June, July and August only; Merced Lake, July and August only
Only the recreational purpose	• No off-trail travel • 1:1.5 stock to person ratio • Two commercial groups per zone per night	• No off-trail travel • 1:1.5 stock to person ratio • Two commercial groups per zone per night Monday-Thursday nights. No overnight use on weekend and holiday nights.	• No overnight use
The recreational and educational purposes	• No off-trail travel • 1:1.5 stock to person ratio • two commercial groups per zone per night	• No off-trail travel • 1:1.5 stock to person ratio • Two commercial groups per zone per night • Merced Lake zone: Limited to 44 weekend use nights per month. • LYV zone: Limited to 131 weekend use nights per month.	• No off-trail travel • Merced Lake zone: No commercial use allowed. • LYV zone: Limited to 465 use nights per month.
The recreational and scenic purposes	• No off-trail travel • 1:1.5 stock to person ratio • Two commercial groups per zone per night	• No off-trail travel • 1:1.5 stock to person ratio • Two commercial groups per zone per night • Merced Lake zone: Limited to 22 weekend use nights per month. • LYV zone: Limited to 65 weekend use nights per month.	• No off-trail travel • Two commercial groups per zone per night • Merced Lake zone: Limited to 78 use nights per month. • LYV zone: Limited to 233 use nights per month.

Merced River Corridor Summary								
	Zone							
Month	South Fork	Johnson Creek	Chilnualna Creek	Clark Range	Wash-burn Lake	Mount Lyell	Merced Lake	LYV
May						No Camping		Weekend Restricted
June						No camping		Restricted
July						No camping	Restricted	Restricted
August						No camping	Restricted	Restricted
September						No camping	Weekend Restricted	Weekend Restricted

C. Limits on Commercial Trips that Realize the Recreational and Educational Purposes:

1. Overnight Use

- Restricted zones (LYV, June, July and August only; Merced Lake, July and August only): Merced Lake zone: Commercial use prohibited because commercial education associated with the High Sierra Camp Loop Trips conducted by the National Park Service exceeds 10% of capacity, which makes it unnecessary to allocate additional capacity for commercial use in support of the educational purpose on this trail corridor. LYV zone: A negligible amount of noncommercial formal education is occurring. Commercial use limited to 465 use nights per month.[32]

- Weekend restricted zones (LYV, May and September only; Merced Lake, September only): Commercial use allowed on weekdays. For weekends and holidays (as defined above) commercial use limited to 131 weekend use nights per month in the LYV zone[33] and 44 weekend use nights per month in the Merced Lake zone.[34] Commercial use allowed on weekdays.

- Commercial trips allowed in the Washburn Lake, Clark Range, South Fork, Johnson Creek, and Chilnualna Creek zones all year. Commercial trips allowed in the LYV zone October through April and the Merced Lake zones October through June.

D. Limits on Commercial Trips that Realize the Recreational and Scenic Purposes:

1. Overnight Use

- Restricted zones (LYV, June, July and August only; Merced Lake, July and August only): Merced Lake zone: A negligible amount of noncommercial, formal scenic use is occurring. Use limited to 78 use nights per month.[35] LYV zone: A negligible amount of noncommercial scenic use is occurring. Commercial use limited to 233 use nights per month.[36]

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[32] Calculated as follows: Capacity for LYV is 150 people per night. 150 x 31 (number of nights/month) equals 4650 use nights. 10% of 4650 equals 465 use nights. Average noncommercial educational use nights (college classes, etc), average, 2009-2010 is 0 use nights. 465 minus 0 equals 465 use nights available for commercial education.

[33] Calculated as follows: Capacity for LYV is 150 people per night. 150 x 8.7 (average number of weekend nights/month) equals1305 use nights. 10% of 1305 equals 131 use nights. Average noncommercial educational use nights (college classes, etc), average, 2009-2010 is 0 use nights. 131 minus 0 equals 131 use nights available for commercial formal education.

[34] Calculated as follows: Capacity for Merced Lake is 50 people per night. 50 x 8.7 (average number of weekend nights/month) equals 435 use nights. 10% of 435 equals 44 use nights. Average noncommercial educational use nights (college classes, etc), average, 2009-2010 is 0 use nights. 44 minus 0 equals 44 use nights available for commercial formal education.

[35] Calculated as follows: Capacity for Merced Lake is 50 people per night. 50 x 31 nights per month equals 1550 use nights. 5% of 1550 equals 78 use nights. Average noncommercial scenic use nights (college classes, etc), average, 2009-2010 is 0 use nights. 78 minus 0 equals 78 use nights available for commercial scenic use.

[36] Calculated as follows: Capacity for LYV is 150 people per night. 150 x 31 nights per month equals 4650 use nights. 5% of 4650 equals 233 use nights. Average noncommercial scenic use nights (college classes, etc), average, 2009-2010 is 0 use nights. 233 minus 0 equals 233 use nights available for commercial scenic use.

- Weekend restricted zones (LYV, May and September only; Merced Lake, September only): Commercial use allowed on weekdays. For weekends and holidays (as defined above), commercial use limited to 65 use nights per month in the LYV zone[37] and 22 use nights per month in the Merced Lake zone.[38]

- Commercial trips allowed in the Washburn Lake, Clark Range, South Fork, Johnson Creek, and Chilnualna Creek zones all year. Commercial trips allowed in the LYV zone October through April and the Merced Lake zones October through June.

PART 8: THE COMMERCIAL USE APPLICATION PROCESS

A. Procedures Applicable to All Commercial Services in Wilderness

Implementation of this Extent Necessary Determination will be integrated into Yosemite's CUA and SUP application procedures and concession management operations. All entities, including concessioners CUA holders, and SUP holders desiring to provide commercial services in the designated wilderness of the Merced River corridor shall do the following:

(1) The concessioner, CUA, or Special Use Permit holder must submit a proposed trip itinerary to the Yosemite Wilderness Office by May 1 or as soon as is feasible. The itinerary must be received prior to any trip entry into the park. The itinerary must provide a schedule of planned trips. For overnight trips, the itinerary must include the dates, point of entry and exit, each night's camping location, and the group size (including employees). Day trips must include the date, group size, trailhead, and destination. Itineraries received prior to May 1 will be used to assign trips for the summer season and may include a second and third choice of trips.

(2) For educational and scenic trips, the applicant must submit an explanation of the manner in which the proposed commercial trip meets the educational or scenic purposes, along with copies of, or internet links to, all advertising and other promotional materials related to that trip and submit educational syllabus for trip and documentation showing that employees are trained and qualified to provide such education.

B. The Minimum Requirement Concept

By policy, the National Park Service must apply the minimum requirement concept to decisions about commercial use in wilderness.[39] The minimum requirement concept is a two part process that determines "if administrative actions, projects, or programs undertaken by the Service or its agent and affecting wilderness character, resources, or the visitor experience are necessary, and, if so how to minimize impacts."[40]

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[37] Calculated as follows: Capacity for LYV is 150 people per night. 150 x 8.7 (average number of weekend nights/month) equals1305 use nights. 5% of 1305 equals 65 use nights. Average noncommercial scenic use nights, average, 2009-2010 is 0 use nights. 65 minus 0 equals 65 use nights available for commercial scenic use.

[38] Calculated as follows: Capacity for Merced Lake is 50 people per night. 50 x 8.7 (average number of weekend nights/month) equals 435 use nights. 5% of 435 equals 22 use nights. Average noncommercial scenic use nights, average, 2009-2010 is 0 use nights. 22 minus 0 equals 22 use nights available for commercial scenic use.

[39] NPS Management Policies 2006 6.4.4

[40] NPS Management Policies 2006 6.3.5

As part of the minimum requirement process, the National Park Service weighs the impacts and benefits to wilderness character. Commercial trips that realize more than one purpose accrue more benefit to wilderness character than those that only realize one purpose but have the same amount of impact. For this reason trips that realize a higher number of purposes will receive preference over those realizing a lower number of purposes when allocating access.

Part of a minimum requirement decision is determining whether an activity is wilderness dependent. Wilderness dependence as used here means if the activity can occur outside of wilderness with little loss of value, it should not take place in wilderness. The wilderness dependence criteria will be used during the application screening process. Commercial trips whose primary purpose is teaching a subject that is not wilderness dependent will be treated as recreational rather than educational. Examples of such topics are weight loss and cooking.

Consistent with this concept, when two commercial groups that are realizing the same number of purposes are competing for the same date in the same location, the lower impact trip will be given preference. When comparing otherwise equivalent commercial stock trips preference will be given to the trip with the lower stock-to-client ratio.

In order to minimize the impacts of commercial stock use, all commercial stock trips are limited to a 1:1.5 stock to person ratio. Accordingly, for every multiple of 3 persons (including employees), only two pack animals are allowed in addition to 3 riding stock.

C. Process for Allocating Proposed Trips

In the event that there is more than one entity that desires to provide Commercial Services on the same date in the same zone, priority shall be determined by the application of the following steps, in order:

(1) Each proposed commercial trip shall be awarded one (1) point for each wilderness public purpose (i.e., recreational, educational, scenic) that it realizes. Priority shall be granted to proposed trips with higher point totals;

(2) Proposed commercial trips that utilize a lower-impact mode of transportation will be given priority over those using higher impact modes of transportation; and

(3) In the case of otherwise comparable stock trips, the trip with the lowest stock to client ratio will be given priority.

(4) Any remaining conflicting proposed commercial trips after the application of steps (1) through (3) above will be resolved through a lottery for proposed commercial trips that will be conducted on May 1 of each calendar year.

All trips proposed after the May 1 lottery will be allocated on a first come first served basis. With respect to trips requested on the same date, any conflicts over requested dates and trailheads will be resolved by the application of steps (1) through (4) above.

D. Compliance

Wilderness Rangers routinely check on Commercial Trips in the field to assure compliance with park regulations. An assessment of the extent to which a Commercial Service provider has met its objective with respect to satisfaction of wilderness purposes will be added to the CUA contact form, for example to evaluate the claim that wilderness education is being provided by qualified personnel in addition to recreation.

Failing to provide promised educational or scenic opportunities may be grounds for limiting a commercial service provider's ability to provide future commercial trips in the Yosemite Wilderness.

PART 9: THE REASSESSMENT PROCESS

The limits on commercial use imposed by this plan will be recalculated when significant changes in use patterns occur. Two current actions may affect this process. The first is research on wilderness travel patterns that was completed in 2010. Trailhead quotas will be adjusted based on the results of this study. As a result, travel patterns may change in a way that would affect the results of an Extent Necessary Determination. In addition, the National Park Service has taken the initial steps of rewriting the Yosemite Wilderness Stewardship Plan which will include an Extent Necessary Determination for the entire wilderness. At that time both visitor use patterns and the Extent Necessary methodology will be reevaluated.

APPENDIX M

CHANGES TO THE ORVS OVER TIME

APPENDIX M

COMPARISON OF MERCED RIVER OUTSTANDINGLY REMARKABLE VALUES OVER TIME (1986-PRESENT)

SEGMENT 1: Main Stem Wilderness (Headwaters To Top Of Nevada Fall)

Geologic/Hydrologic Outstandingly Remarkable Values (ORVs)

1986 Sierra National Forest Draft Land and Resource Management Plan	Most spectacular glaciated valley in world, granite cliffs and Domes
1996 Draft Yosemite Valley Housing Plan	Glaciation, cirques, "Lost" and "Twin Bridges" hanging valley separated by cascades; world's largest concentrations of granite domes River gradient from 13,000 to 6,000 feet, glaciers, pristine water quality, log jams
2000 and 2005 Merced River Plans	U-shaped, glacially carved canyon, cascades and soda springs below Washburn Lake Free flowing, gradient drop, glacial remnants, logjam, numerous cascades
2008 Draft ORVs	Glacial processes River gradient drop, rapid snowmelt producing high-volume spring flows
2010 Draft ORVs	Large-scale, U-shaped glacially carved canyon, above Brunell Point shows relationship between geology and river course
2011 Spring Draft Baseline Conditions Report	Following the path of the ancient Merced River, glaciers gouged a textbook U-shaped canyon with sheer granite walls rising steeply above
2011 Fall Planning Workbook	The upper Merced River canyon is a textbook example of a canyon that was carved by glaciers
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	The upper Merced River canyon is a textbook example of a glacially-carved canyon
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: The cascades, soda springs, and logjam were removed as they are not rare, unique, or exemplary. Free-flowing conditions are an established river value. Geology experts have noted that the canyon is not U-shaped, yet it remains a textbook example of a glacially-carved granite canyon. The geologic and hydrologic river values were merged in the 2010 *Draft ORV* report because these values overlap and are best described and managed as a single value.

SEGMENT 1: Main Stem Wilderness (Headwaters To Top Of Nevada Fall)

Biological ORV

1986 Sierra National Forest Draft Land And Resource Management Plan	Vegetation: state listed rare species
1996 Draft Yosemite Valley Housing Plan	Large specimens of western juniper above Washburn Lake, white fir above LYV, rare plant: Eriophyllum congdonii, rare wildlife: Mt. Lyell salamander, mountain yellow-legged frog, Yosemite toad
2000 and 2005 Merced River Plans	Sierra riverine environments, high-quality riparian, meadow, aquatic habitats, special status-species such as mountain yellow-legged frog
2008 Draft ORVs*	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, and Tompkin's sedge
2010 Draft ORVs	Meadows, riparian habitats, annual flooding, 8 of 9 special status animal species
2011 Spring Draft Baseline Condition Report	Numerous, exquisite small meadows and relatively intact adjacent riparian habitats support several rare bird and mammal species
2011 Fall Planning Workbook	The Merced River creates numerous, small meadows and relatively intact adjacent riparian habitats
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	The Merced River contains numerous small meadows and riparian habitat with high biological integrity

Rationale: Special-status species were removed because they are not strictly river related or river dependent. The ORV was revised to include the meadow and riparian habitat in its entirety that, in addition, to existing U.S. Fish and Wildlife Service and California Department of Fish and Game protocol, would serve to protect special status species and other riparian and meadow species found along the Merced River corridor.

SEGMENT 1: Main Stem Wilderness (Headwaters To Top Of Nevada Fall)

Recreational ORV

1986 Sierra National Forest Draft Land and Resource Management Plan	No Recreational ORV
1996 Draft Yosemite Valley Housing Plan	Travel and camping in LYV, Merced Lake, Washburn Lake
2000 and 2005 Merced River Plans	Solitude, primitive & unconfined, day hiking, backpacking, horseback riding and packing, camping, enjoyment of natural river sounds, untrailed sections
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding
2010 Draft ORVs	Hiking and backpacking, wilderness experiences, solitude, personal reflection, closeness to nature, independence, self-reliance, primitive travel, camping, exploration, and adventure.

Spring 2011 Draft Baseline Conditions Report	The Merced River, spectacular High Sierra landscape, dramatic scenery, natural sounds, and abundant opportunities for solitude combine to produce a variety of exceptional wilderness-oriented recreational activities.
2011 Fall Planning Workbook	Visitors to federally-designated Wilderness in the corridor engage in a variety of activities in an iconic High Sierra landscape, where opportunities for primitive and unconfined recreation, self-reliance, and solitude shape the experience
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: All specific activities were removed from the title of the ORV and an emphasis was placed on the river-related elements of wilderness character that are exemplary in this river segment.

SEGMENT 1: Main Stem Wilderness (Headwaters To Top Of Nevada Fall)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	One of the most spectacular scenic canyons in the world, waterfalls
1996 Draft Yosemite Valley Housing Plan	Glaciated Merced Lake, Washburn Lake river Canyon; Bunnell Cascades and confluences of tributaries, Clark and Cathedral ranges
2000 and 2005 Merced River Plans	Views of glaciated river canyon, Merced Lake, Washburn Lake Bunnell Cascades, confluence of tributaries, granite domes, Clark and Cathedral ranges
2008 Draft ORVs	Seasonal and daily changes, lighting on granite walls, domes, meadows, calm water, rushing cascades, scenic experience encourages interpretation and education
2010 Draft ORVs	Patternoster Lakes, Montane forest, U-shaped glacial valley, several scenic landmarks listed, natural setting, exceptional scenery
Spring 2011 Draft Baseline Conditions Report	Same as 2010
2011 Fall Planning Workbook	Visitors to this Wilderness segment experience scenic views of serene montane lakes, pristine meadows, slickrock cascades, and High Sierra peaks
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Visitors to this Wilderness segment experience exemplary views of serene montane lakes, pristine meadows, slickrock cascades, and High Sierra peaks

Rationale: Views of Bunnell Cascades and paternoster lakes were removed as they are not rare, unique or exemplary. Views of the Clark and Cathedral Ranges were removed as they are not always visible from the river corridor. A more appropriate and accurate list of exemplary High Sierra scenic views was subsequently developed.

SEGMENT 1: Main Stem Wilderness (Headwaters To Top Of Nevada Fall)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Cultural ORV
1996 Draft Yosemite Valley Housing Plan	Prehistoric, trans-Sierran route used for 3-4 thousand years, 24 archeological sites, 28 historic structures at Merced Lake
2000 and 2005 Merced River Plans	Prehistoric, trans-Sierran route used for thousands of years, prehistoric sites, homestead sites, trails, river crossings, HSC, and structures
2005 MRP	Same as 2000
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations
2010 Draft ORVs	No Cultural ORV
2011 Fall Planning Workbook	No Cultural ORV
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	No Cultural ORV
2013 Draft Comprehensive Management Plan and EIS	No Cultural ORV

Rationale: The prehistoric, trans-Sierran route used for thousands of years, prehistoric sites, homestead sites, trails, river crossings, and the Merced Lake High Sierra Camp and structures were excluded from the list of ORVs as they are not rare, unique, or exemplary in a regional or national context.

SEGMENT 2: Yosemite Valley, Top Of Nevada Fall To Former Cascades Diversion Dam

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Most spectacular glaciated valley in world, granite cliffs & Domes
1996 Draft Yosemite Valley Housing Plan	Largest glaciated valley in Sierra, hanging valleys, terminal moraine, exfoliation, exposed granite monoliths World-class waterfalls, flood regime, oxbows, Mirror Lake
2000 and 2005 Merced River Plans	Glaciated U-shaped valley, mature meandering river, hanging valleys listed, glaciation (moraines) Meandering river, world-renowned waterfalls, flood regime, oxbows, wetlands, fluvial processes
2008 Draft ORVs	Glacial processes formed U-shaped valley, Giant Staircase, El Cap moraine, active rock falls Meandering river, hanging valleys, world-renowned waterfalls
2010 Draft ORVs	Giant Staircase, El Cap Moraine, Glacial action creating hanging valleys and world-renowned waterfalls, meandering and alluvial river (gentle gradient, flood regime, woody debris, riparian vegetation)
Spring 2011 Draft Baseline Conditions	The "Giant Staircase," which includes Vernal and Nevada Falls, is one of

Report	the finest examples of stair-step river morphology in the country. Yosemite Valley has exemplary glacial geology on display, from spectacular hanging valleys to textbook recessional moraines. From Happy Isles to the west end of the valley, the Merced River is a rare example of a mid-elevational alluvial river.
2011 Fall Planning Workbook	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. The El Capitan Moraine is an extraordinary example of a recessional moraine. The Merced River from Happy Isles to the west end of Yosemite Valley provides an outstanding example of a rare, mid-elevation alluvial river.
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	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. The Merced River from Happy Isles to the west end of Yosemite Valley provides an outstanding example of a rare, mid-elevation alluvial river.

Rationale: Oxbows, wetlands, and fluvial processes are included in the biological ORV or are included within the expression "meandering and alluvial river." Woody debris and riparian vegetation were added because they are examples of alluvial river functions. In the fall 2011 workbook, The El Capitan Moraine and Giant Staircase were identified as independent ORVs because the management of these values is different than the management of the alluvial river. In the November 2012 draft environmental impact statement, the El Capitan Moraine ORV was removed because moraines are widespread across the Sierra Nevada and it is not unique or exemplary, nor is it strictly river related.

SEGMENT 2: Yosemite Valley (Top Of Nevada Fall To Former Cascades Diversion Dam)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Vegetation: state-listed rare species Wildlife: peregrine falcon
1996 Draft Yosemite Valley Housing Plan	Half of all plant species in the park found in Valley, riparian and meadow areas, California black oak, wildlife habitat, listing several rare species, including indigenous rainbow trout
2000 and 2005 Merced River Plans	Riparian and meadow areas, riparian wetland, riverine areas, habitat for river-related species, special-status species, neo-tropical songbirds, bat species
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, and Tompkin's sedge, Happy Isles fen
2010 Draft ORVs	Meadows, riparian vegetation, high water table, eight rare wildlife species, bat species, sedge species- all due to year-round water availability

Spring 2011 Draft Baseline Conditions Report	The large, moist meadows and associated riparian communities comprise one of the largest mid-elevation meadow complexes in the Sierra Nevada, supporting an exceptional diversity of plant and animal species.
2011 Fall Planning Workbook	The meadows and riparian communities of Yosemite Valley comprise one of the largest mid-elevation meadow complexes in the Sierra Nevada.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: The Happy Isles fen and neotropical songbirds were removed because they are not river related or dependent. Special status species were also removed because they are not strictly river related or dependent. The ORV was subsequently revised to include the meadow and riparian habitat in its entirety, which, in addition to existing US Fish and Wildlife Service and California Department of Fish and Game protocol, will serve to protect special status species in addition to other riparian and meadow species found along the Merced River corridor.

SEGMENT 2: Yosemite Valley (Top Of Nevada Fall To Former Cascades Diversion Dam)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Premier outdoor recreation area in world, picnicking, fishing, swimming, river rafting
1996 Draft Yosemite Valley Housing Plan	Hiking, picnicking, camping, climbing, skiing, fishing, photography, swimming, nature study, horseback riding, biking, sightseeing, and boating
2000 and 2005 Merced River Plans	River-related rec activities, nature study & sightseeing to hiking, one of the premier outdoor rec areas in the world
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding, Mist Trail, swimming and floating
2010 Draft ORVs	World-renowned destination, World Heritage Site, outdoor river-related recreation, active pursuits listed, creative pursuits listed, opportunities for all ages and abilities
Spring 2011 Draft Baseline Conditions Report	The Valley's incredible setting – with its striking cliffs and waterfalls towering above a meandering river and extensive moist meadows – provides for a variety of active, creative, educational, social, and reflective experiences.
2011 Fall Planning Workbook	Visitors to Yosemite Valley enjoy a wide variety of river-related recreational activities in the Valley's extraordinary setting along the Merced River
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: All specific activities were removed from the title of the ORV and an emphasis was placed on the river-related elements of wilderness character that are exemplary in this river segment.

SEGMENT 2: Yosemite Valley (Top Of Nevada Fall To Former Cascades Diversion Dam)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	One of most spectacularly scenic canyons in the world, waterfalls
1996 Draft Yosemite Valley Housing Plan	Specific examples of Waterfalls, rock cliffs, & meadows, black oak woodlands, interface of river, rock, meadow, and forest, 18 identified historic vistas
2000 and 2005 Merced River Plans	Specific examples of waterfalls, rock cliffs, & meadows; interface of river, rock, meadow, and forest
2008 Draft ORVs	Specific valley views listed, depictions of the valley in early tourism posters encourage the creation of the NPS, scenic experience encourages interp and education
2010 Draft ORVs	Famous landmarks listed, compound oxbows, wetlands, and meadows, Montane forest and sheer rock faces create intense contrast and scenic river-related views
Spring 2011 Draft Baseline Conditions Report	Crashing over Nevada and Vernal Falls and then meandering quietly under 2,000-foot cliffs, the Merced forms a placid foreground to some of the world's most iconic scenery.
2011 Fall Planning Workbook	Visitors to Yosemite Valley experience scenic views of some of the world's most iconic scenery, with the river and meadows forming a placid foreground to towering cliffs and waterfalls.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	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.

Rationale: This ORV has remained generally consistent over time.

SEGMENT 2: Yosemite Valley (Top Of Nevada Fall To Former Cascades Diversion Dam)

Cultural ORVs

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Indian sites along river, Miwok area
1996 Draft Yosemite Valley Housing Plan	100 archeological sites, prehistoric people habitation, traditionally used plants, spiritual areas, prehistoric trail junctions, first land area and river designated for preservation in US, historical resources and landscapes
2000 and 2005 Merced River	Thousands of years of human occupation, archeological sites, continuing traditional use, designed landscapes & developed areas, historic buildings,

Plans	circulation systems providing access to natural features that are culturally valuable
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, cultural landscapes reflecting human footprint, archeological sites, American Indian spiritual associations
2010 Draft ORVs	Traditional Cultural Property representing people in area before 1851 to present, traditionally used plants, village sites, and spiritual areas, archeological sites, river-dependent culture
Spring 2011 Draft Baseline Conditions Report	The Yosemite Valley Archeological District is a nearly continuous, river-related archeological landscape containing dense concentrations of resources that reflect thousands of years of settlement. The Yosemite Valley potential Traditional Cultural Property (TCP) represents a rare connection of places and people that began before 1851 and continues to the present, with the river at the heart of this cultural system.
2011 Fall Planning Workbook	The Yosemite Valley Archeological District is a nearly continuous, river-related archeological landscape containing dense concentrations of resources that reflect thousands of years of settlement. The Yosemite Valley potential Traditional Cultural Property (TCP) represents a rare connection of places and people that began before 1851 and continues to the present, with the river at the heart of this cultural system.
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	The Yosemite Valley Archeological District is a linked landscape that contains dense concentrations of resources that represent thousands of years of human settlement along this segment of the Merced River. Yosemite Valley American Indian ethnographic resources include a linked landscape of specifically mapped, traditional-use plant populations and other ongoing cultural practices.
2013 Draft Comprehensive Management Plan and EIS	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 along this segment of the Merced River. 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. Yosemite Valley Historic Resources: Represent 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.

Rationale: Prehistoric trail junctions and circulation systems were removed as they are not rare, unique, or exemplary.

Historic buildings were removed because they are not river related or dependent.

Circulation systems were removed because they are not rare, unique, or exemplary; most river-canyon circulation systems are structured similarly.

The Yosemite Valley Archeological District was identified as a separate ORV from the ethnographic resources because the management strategies for these values can be different. The Yosemite Valley

Archeological District encompasses a complete interrelated landscape of archeological resources that must be managed as a district.

The term American Indian is the preferred term.

The Yosemite Valley Historic Resources ORV was added to recognize the significance of this exemplary river related historic landscape and to better protect it in its entire context along the Merced River corridor.

SEGMENT 3: Merced Gorge (Former Cascades Diversion Dam To Western Park Boundary)

Geologic/Hydrologic

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Geologic/Hydrologic ORV
1996 Draft Yosemite Valley Housing Plan	Transition from U-shaped, glaciated valley to V-shaped gorge "Young river"
2000 and 2005 Merced River Plans	Transition from U-shaped valley to V-shaped gorge with steep gradient Exceptionally steep gradients (2,000 foot elevation drop in 6 miles)
2008 Draft ORVs	Glacial Processes River gradient drop, rapid snowmelt producing high-volume spring flows, rock-fall driven morphology resulting in the deposition of enormous boulders
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2013 Draft Comprehensive Management Plan and EIS	No Geologic/Hydrologic ORV

Rationale: Transition from U-shaped valley to V-shaped gorge with steep gradient was removed as it is not rare, unique, or exemplary; most Sierra rivers have such a transition.

SEGMENT 3: Merced Gorge (Former Cascades Diversion Dam To Western Park Boundary)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Vegetation: state-listed rare species Wildlife: peregrine falcon
1996 Draft Yosemite Valley Housing Plan	Diverse riparian areas intact and almost entirely undisturbed, canyon live oak research, indigenous rainbow trout

2000 and 2005 Merced River Plans	Rich and diverse riparian habitat associated with intact special status species that are relatively undisturbed
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, & Tompkin's sedge
2010 Draft ORVs	No Biological ORV
Spring 2011 Draft Baseline Conditions Report	No Biological ORV
2011 Fall Planning Workbook	No Biological ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Biological ORV
2013 Draft Comprehensive Management Plan and EIS	No Biological ORV

Rationale: Rich and diverse riparian habitat associated with intact special status species that are relatively undisturbed was removed as it is not rare, unique, or exemplary.

SEGMENT 3: Merced Gorge (Former Cascades Diversion Dam To Western Park Boundary)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Recreational ORV
1996 Draft Yosemite Valley Housing Plan	Picnicking, climbing, fishing, photography, and sightseeing
2000 and 2005 Merced River Plans	River-related recreational opportunities: Picnicking, fishing, photography, and sightseeing
2008 Draft ORVs	Views of granite cliffs, roar and vibrations of river during spring runoff, picnicking--create memories, traditions, and bonding
2010 Draft ORVs	Scenic driving and access to several pools and beaches for swimming, fishing, and picnicking; natural setting and opportunities for solitude
Spring 2011 Draft Baseline Conditions Report	The rushing and cascading river, interspersed with scheduled holes, provides the setting for relaxing river-related activities.
2011 Fall Planning Workbook	No Recreational ORV
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	No Recreational ORV
2013 Draft Comprehensive Management Plan and EIS	No Recreational ORV

Rationale: The recreational ORV was removed from this segment because none of the river-related or dependent activities are rare, unique, or exemplary.

SEGMENT 3: Merced Gorge (Former Cascades Diversion Dam To Western Park Boundary)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	One of most spectacularly scenic canyons in the world, waterfalls
1996 Draft Yosemite Valley Housing Plan	View of Pulpit Rock and Rainbow, views of specific waterfalls and rocks listed, V-shaped gorge; the river and its cascades
2000 and 2005 Merced River Plans	Views of the Cascades, spectacular rapids among giant boulders, views of specific waterfalls and rocks listed
2008 Draft ORVs	Seasonal and daily changes, lighting on granite walls, calm water, rushing cascades, scenic experience encourages interpretation and education
2010 Draft ORVs	Narrow gorge, massive boulders, canyon walls and cliffs, waterfalls, parades of color
Spring 2011 Draft Baseline Conditions Report	Descending 2,000 feet in 14 miles, the river is a continuous cascade under spectacular Sierra granite outcrops and domes.
2011 Fall Planning Workbook	The Merced River drops 2,000 feet over 14 miles; a continuous cascade under spectacular Sierra granite outcrops and domes.
2012 Preliminary Concepts Workbook and Draft Baseline Condition Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	The Merced River drops 2,000 feet over 14 miles, a continuous cascade under exemplary Sierra granite outcrops and domes.

Rationale: Present language is consistent with statements made in the past.

SEGMENT 3: Merced Gorge (Former Cascades Diversion Dam To Western Park Boundary)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Indian sites along river, Miwok area
1996 Draft Yosemite Valley Housing Plan	Archeological sites in the Cascades area
2000 and 2005 Merced River Plan	Prehistoric sites and historic sites & structures such as those relating to historic engineering projects
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations
2010 Draft ORVs	No Cultural ORV
Spring 2011 Draft Baseline Conditions Report	No Cultural ORV
2011 Fall Planning Workbook	No Cultural ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Cultural ORV
2013 Draft Comprehensive Management Plan and EIS	No Cultural ORV

Rationale: Prehistoric sites and historic sites & structures such as those relating to historic engineering projects were removed as they are not rare, unique, or exemplary.

SEGMENT 4: El Portal (Parkline To El Portal Administrative Site Boundary)

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Contact between metasedimentary & granitic rocks
1996 Draft Yosemite Valley Housing Plan	Transition from igneous to meta-sedimentary rocks--possibly oldest in Sierra Nevada Continuous rapids throughout segment
2000 and 2005 Merced River Plans	Transition from igneous to metasedimentary rocks--among oldest in Sierra Nevada Continuous rapids
2008 Draft ORVs	Glacial Processes
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	Changing river gradients, glacial history, and powerful floods created a boulder bar whose huge boulders are much larger than typically found in such deposits.
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	The boulder bar in El Portal was created by changing river gradients, glacial history, and powerful floods. These elements have resulted in accumulation of extraordinary, large boulders, which are rare in such deposits.
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: The language was revised to more clearly explain the origin of the boulder bar in El Portal.

Transition from igneous to meta-sedimentary rocks--among oldest in Sierra Nevada was removed as it is not rare, unique, or exemplary (occurring on most rivers flowing west from the Sierra crest).

SEGMENT 4: El Portal (Parkline To El Portal Administrative Site Boundary)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Vegetation: state-listed rare species
1996 Draft Yosemite Valley Housing Plan	Rare plant species listed, valley elderberry longhorn beetle and its habitat, spotted owl habitat, riparian zone for wildlife species

2000 and 2005 Merced River Plans	Riverine habitats: riparian woodlands associated with special-status species, Tompkin's sedge and Valley elderberry longhorn beetle and its habitat; riparian zone for wildlife species
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, & Tompkin's sedge
2010 Draft ORVs	No Biological ORV
Spring 2011 Draft Baseline Conditions Report	Valley oaks (*Quercus lobata*), a regionally rare species, thrive in this area due to its high water table.
2011 Fall Planning Workbook	No Biological ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Valley oaks (*Quercus lobata*), a regionally rare species, occur in the El Portal area.
2013 Draft Comprehensive Management Plan and EIS	No Biological ORV

Rationale: Tompkin's sedge and valley elderberry longhorn beetle were removed because they are not river related or dependent. Riverine habitats: riparian woodlands associated with special-status species were removed as they are not rare, unique, or exemplary.

Valley oaks (*Quercus lobata*) were initially added due to public correspondence. In the January 2013 draft environmental impact statement, the valley oaks ORV was removed as valley oaks are widespread across California and the Sierra Nevada foothills and, while commonly located along drainages and in low lying wet areas, are not strictly river related or dependent. The EL Portal stand of valley oaks were determined to not be rare or exemplary as larger specimens of valley oaks occur in the greater Yosemite Region, along the Merced River, downstream of the park and along river tributaries.

SEGMENT 4: El Portal (Parkline To El Portal Administrative Site Boundary)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	Whitewater boating
1996 Draft Yosemite Valley Housing Plan	Whitewater use (class III to V) and fishing
2000 and 2005 Merced River Plans	Range of river-related rec opportunities, white-water rafting and kayaking (class III to V) and fishing
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding
2010 Draft ORVs	No Recreational ORV
Spring 2011 Draft Baseline Conditions Report	The largely natural setting of the rivers provides for memorable active, contemplative, and creative pursuits.
2011 Fall Planning Workbook	No Recreational ORV
2012 Preliminary Concepts Workbook	No Recreational ORV

and Draft Baseline Conditions Report	
2013 Draft Comprehensive Management Plan and EIS	No Recreational ORV

Rationale: Recreational ORV in this segment has been removed because the representative activities were not rare, unique, or exemplary.

SEGMENT 4: El Portal (Parkline To El Portal Administrative Site Boundary)

Scenic ORV

Rationale: The Scenic ORV was included in the 2008 *Draft ORVs* but removed as the scenery in this segment was determined not to be unique, rare or exemplary.

SEGMENT 4: El Portal (Parkline To El Portal Administrative Site Boundary)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	El Portal, old mining town, rail-road exhibit
1996 Draft Yosemite Valley Housing Plan	Native American habitation; 17 archeological sites, including burials, historic structures; logging railroad incline
2000 and 2005 Merced River Plans	Some of the oldest archeological sites in Yosemite, historic Indian villages and gathering places, historic structures related to early tourism and industrial development
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations
2010 Draft ORVs	Important place of settlement, subsistence, and trade along the River; village sites; some of the oldest archeological deposits in the Sierra foothills (9,500 years), Johnny Wilson Ranch (American Indian Homestead)
Spring 2011 Draft Baseline Conditions Report	With its temperate climate and abundant subsistence resources, El Portal was a crossroads of life and trade, with the river linking the lifeways of peoples from the historic and prehistoric past, both in California and beyond.
2011 Fall Planning Workbook	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 Johnny Wilson Ranch, a regionally rare historic-era American Indian Homestead.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	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.
2013 Draft Comprehensive Management Plan and EIS	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, including the archeological remains of the Johnny Wilson Ranch, a regionally rare historic-era American Indian Homestead.

Rationale: Historic structures related to early tourism and industrial development were removed as they are not rare, unique, or exemplary, occurring in many resort areas along rivers in the country. The Johnny Wilson Ranch was added because it is rare, unique, and exemplary. The El Portal Archeological District was identified as a Cultural ORV because it encompasses a complete interrelated landscape of archeological resources that must be managed as a district.

SEGMENT 5: South Fork Merced River Above Wawona (Headwaters To Top Of Pool At Wawona Impoundment)

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	The South Fork was not included in the 1986 ORVs
1996 Draft Yosemite Valley Housing Plan	V-Shaped canyons due to extremely hard rock, moraine meadows, hot sulphur springs above Gravely Ford, Paternoster lakes Free-flowing river and pristine water quality
2000 and 2005 Merced River Plans	Glaciated valleys in high country and V-shaped canyons above Wawona; moraine meadows and soda springs above Gravelly Ford are river-related geologic features Free-flowing river and excellent water quality
2008 Draft ORVs	Glacial Processes River gradient drop, rapid snowmelt producing high-volume spring flows
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2013 Draft Comprehensive Management Plan and EIS	No Geologic/Hydrologic ORV

Rationale: The glaciated valleys in the high country, and V-shaped canyons above Wawona, and moraine meadows and soda springs above Gravelly Ford were removed as they are not rare, unique, or exemplary. Free-flowing conditions and water quality are established river values.

SEGMENT 5: South Fork Merced River Above Wawona (Headwaters To Top Of Pool At Wawona Impoundment)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Biological ORV

1996 Draft Yosemite Valley Housing Plan	Rare wildlife species, including Wawona riffle beetle & mountain yellow-legged frog
2000 and 2005 Merced River Plans	Riverine environments typical of Sierra; examples of special-status species, including Wawona riffle beetle & mountain yellow-legged frog
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, & Tompkin's sedge
2010 Draft ORVs	Meadows, riparian habitats, depend on annual flooding, 8 of the 9 special status animal species.
Spring 2011 Draft Baseline Conditions Report	No Biological ORV
2011 Fall Planning Workbook	No Biological ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	The Merced River creates numerous, exquisite small meadows and relatively intact adjacent riparian habitats.
2013 Draft Comprehensive Management Plan and EIS	The Merced River sustains numerous small meadows and riparian habitat with high biological integrity.

Rationale: Wawona riffle beetle and mountain yellow-legged frog were removed because they are not river related or dependent.

SEGMENT 5: South Fork Merced River Above Wawona (Headwaters To Top Of Pool At Wawona Impoundment)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Recreational ORV
1996 Draft Yosemite Valley Housing Plan	Pristine wilderness values; no trails along river
2000 and 2005 Merced River Plan	River-related solitude, enjoyment of natural river sounds, primitive & unconfined recreation; predominantly without trails, except 4 bridgeless trail crossings in the upper segment
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding
2010 Draft ORVs	Dramatic scenery, natural sounds, hiking & backpacking, wilderness experiences, solitude, personal reflection, closeness to nature, independence, self-reliance, primitive travel, camping, exploration, & adventure.
Spring 2011 Draft Baseline Conditions Report	The Merced River, spectacular High Sierra landscape, dramatic scenery, natural sounds, and abundant opportunities for solitude combine to produce a variety of exceptional wilderness-oriented recreational activities.
2011 Fall Planning Workbook	No Recreational ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Recreational ORV
2013 Draft Comprehensive Management Plan and EIS	No Recreational ORV

Rationale: The recreational ORV in this segment has been removed because the representative activities were not rare, unique, or exemplary.

SEGMENT 5: South Fork Merced River Above Wawona (Headwaters To Top Of Pool At Wawona Impoundment)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Scenic ORV
1996 Draft Yosemite Valley Housing Plan	Views of Triple Divide Peak and Sierra Crest
2000 & 2005 Merced River Plan	Views of unique river features: large pothole pools in slick rock cascades, old growth forest, and meadows
2008 Draft ORVs	Seasonal and daily changes, lighting on granite walls, domes, meadows, calm water, rushing cascades, scenic experience encourages interpretation and education
2010 Draft ORVs	Largely inaccessible; few trail crossings; unspoiled Sierra Nevada river valley views dominated by forest-cloaked hills, distant peaks, and an untamed river; some of the wildest views possible in the Sierra Nevada.
Spring 2011 Draft Baseline Conditions Report	Passing through an untrammeled forested wilderness, the South Fork Merced River forms the centerpiece of some of the Sierra's wildest scenery.
2011 Fall Planning Workbook	The South Fork Merced River passes through a vast area of natural scenic beauty.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	The South Fork Merced River passes through a vast area of exemplary and wild scenic beauty.

Rationale: This ORV has remained generally consistent over time.

SEGMENT 5: South Fork Merced River Above Wawona (Headwaters To Top Of Pool At Wawona Impoundment)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Cultural ORV
1996 Draft Yosemite Valley Housing Plan	Archeological sites and historical properties; large expanse of wilderness

2000 and 2005 Merced River Plan	River-related prehistoric sites and resources; historic stock use and cavalry activities
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations
2010 Draft ORVs	Finding seasonal trade, travel, and subsistence opportunities along the South Fork Merced, Native Americans left behind regionally rare rock ring features with wooden remains.
Spring 2011 Draft Baseline Conditions Report	Finding seasonal trade, travel, and subsistence opportunities along the South Fork Merced, American Indians left behind regionally rare, prehistoric rock-ring features with wooden remains.
2011 Fall Planning Workbook	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. The South Fork of the Merced River includes regionally rare evidence of indigenous settlement including prehistoric rock ring features with wooden remains.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. This segment includes regionally rare evidence of indigenous settlement along the South Fork Merced River, including prehistoric rock ring features with wooden remains.
2013 Draft Comprehensive Management Plan and EIS	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. 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.

Rationale: Historic stock use and cavalry activities were removed because they are not river related or dependent, nor are they rare, unique, or exemplary.

The term American Indian is the preferred term.

It was specified that the rare rock ring features are prehistoric.

The Wawona Archeological District was added because it encompasses a complete interrelated landscape of archeological resources that must be managed as a district. This district spans Segments 5-8.

SEGMENT 6: Wawona Impoundment (Top Of Pool At Wawona Impoundment To 200 Feet Below Dam)

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	The South Fork was not included in the 1986 ORVs
1996 Draft Yosemite Valley Housing Plan	Excellent water quality

2000 and 2005 Merced River Plans	Same as 1996
2008 Draft ORVs	No Geologic/Hydrologic ORV
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2013 Draft Comprehensive Management Plan and EIS	No Geologic/Hydrologic ORV

Rationale: Water quality was removed as it is an established river value.

SEGMENT 6: Wawona Impoundment (Top Of Pool At Wawona Impoundment To 200 Feet Below Dam)

Recreational ORV

Rationale: Sightseeing, fishing, photography, and hiking were included as an ORV in 1996 *Draft Yosemite Valley Housing Plan* but removed from subsequent drafts as these recreational activities are not strictly river related or dependent.

SEGMENT 6: Wawona Impoundment, Top Of Pool At Wawona Impoundment To 200 Feet Below Dam

Scenic ORV

Rationale: Views of the river and Wawona Dome were included as an ORV in the 1996 Draft Yosemite Valley Plan but removed because they were determined not to be rare, unique or exemplary.

SEGMENT 6: Wawona Impoundment (Top Of Pool At Wawona Impoundment To 200 Feet Below Dam)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Cultural ORV
1996 Draft Yosemite Valley Housing Plan	Archeological sites and historic properties

2000 & 2005 Merced River Plan	No Cultural ORV
2008 Draft ORVs	No Cultural ORV
2010 Draft ORVs	No Cultural ORV
Spring 2011 Draft Baseline Conditions Report	No Cultural ORV
2011 Fall Planning Workbook	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: The Wawona Archeological District was added as an independent ORV because it encompasses a complete interrelated landscape of archeological resources that must be managed as a district. This district spans Segments 5-8.

SEGMENT 7: Wawona (200 Feet Below Dam Wawona Impoundment To Squirrel Creek)

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	The South Fork was not included in the 1986 ORVs
1996 Draft Yosemite Valley Housing Plan	Moraines; geomorphology of Wawona Meadow; Wawona Dome Excellent water quality
2000 and 2005 Merced River Plan	Excellent water quality
2008 Draft ORVs	Glacial Processes Low gradient slows river, rapid snowmelt producing high-volume spring flows
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2013 Draft Comprehensive Management Plan and EIS	No Geologic/Hydrologic ORV

Rationale: ORV was removed as water quality is an established river value. Low-gradient and high-volume spring flows are not rare, unique, or exemplary.

SEGMENT 7: Wawona (200 Feet Below Dam Wawona Impoundment To Squirrel Creek)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Biological ORV
1996 Draft Yosemite Valley Housing Plan	Rare wildlife species and rare plant species listed (including *Myrica hartwegii*); Wawona Meadow rare—threatened plant community in California, contains high species diversity, wetlands, & specialized habitats
2000 and 2005 Merced River Plans	Diversity of river-related species, wetlands, and riparian habitats; Special status species, including Wawona riffle beetle
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, & Tompkin's sedge
2010 Draft ORVs	Sierra sweet bay (*Myrica hartwegii*), a rare plant found exclusively on river banks in the central Sierra, occurs along the South Fork in this segment
Spring 2011 Draft Baseline Conditions Report	Same as 2010
2011 Fall Planning Workbook	The Sierra sweet bay (*Myrica hartwegii*) is a rare plant found along the South Fork Merced River.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: Diversity of river-related species, wetlands, and riparian habitats were removed as they are not rare, unique, or exemplary, with the exception of *Myrica hartwegii*. Special-status species, including Wawona riffle beetle, were removed because they are not river related or dependent.

SEGMENT 7: Wawona (200 Feet Below Dam Wawona Impoundment To Squirrel Creek)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Recreational ORV
1996 Draft Yosemite Valley Housing Plan	Hiking, picnicking, camping, skiing, fishing, photography, swimming, nature study, horseback riding, biking, sightseeing, and boating
2000 and 2005 Merced River Plans	Opportunities to experience a spectrum of river-related recreational activities, from nature study and photography to hiking
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding
2010 Draft ORVs	Largely natural setting allowing visitors to easily connect with river; several pools and beaches; swimming, relaxing, and fishing; camping allows visitors to be close to river overnight

Spring 2011 Draft Baseline Conditions Report	The largely natural setting of the rivers provides for memorable active, contemplative, and creative pursuits.
2011 Fall Planning Workbook	No Recreational ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Recreational ORV
2013 Draft Comprehensive Management Plan and EIS	No Recreational ORV

Rationale: The recreational ORV in this segment has been removed because the representative activities were not rare, unique, or exemplary.

SEGMENT 7: Wawona (200 Feet Below Dam Wawona Impoundment To Squirrel Creek)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Scenic ORV
1996 Draft Yosemite Valley Housing Plan	Views of Wawona Dome; the free-flowing river; historic vistas; view of confluence and cascades of Chilnualna Creek; confluence of Big Creek
2000 and 2005 Merced River Plans	Views of Wawona Dome
2008 Draft ORVs	Seasonal and daily changes, lighting on granite walls, domes, meadows, calm water, rushing cascades, scenic experience encourages interpretation and education
2010 Draft ORVs	No Scenic ORV
Spring 2011 Draft Baseline Conditions Report	No Scenic ORV
2011 Fall Planning Workbook	No Scenic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Scenic ORV
2013 Draft Comprehensive Management Plan and EIS	No Scenic ORV

Rationale: Views of Wawona Dome were removed as they are not rare, unique, or exemplary.

SEGMENT 7: Wawona (200 Feet Below Dam Wawona Impoundment To Squirrel Creek)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Cultural ORV
1996 Draft Yosemite Valley Housing Plan	Over 60 prehistoric and historic archeology sites, traditional plant gathering; historic structures: Wawona hotel, pioneer historic center, Galen Clark homestead, Stella Lake; historic sites in Wawona Meadow

2000 and 2005 Merced River Plans	Thousands of years of human occupation, including numerous prehistoric and historic Indian villages; historic sites, structures, and landscape features related to tourism, early Army and NPS admin, and homesteading
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations; covered bridge built by Galen Clark in 1868 as an open truss span (covered in 1875)
2010 Draft ORVs	Flowing through a broad basin, the South Fork Merced provided the water and location necessary for prehistoric settlements, for the African-American buffalo soldiers, and for more recent settlers, who left behind evidence of far-reaching traffic and trade, significant archeological sites, and one of very few covered bridges in the region.
Spring 2011 Draft Baseline Conditions Report	With its year-round water and level terrain for settlement, the Wawona Archeological District is composed of dense clusters of historic and prehistoric river-related sites that provide evidence of far-reaching traffic and trade. Physical remnants of U.S. Army Cavalry Camp A. E. Wood document the unique Yosemite legacy of the African-American Buffalo Soldiers, who founded their camps near the river's strategic water source and related ecological habitat. Built to connect human developments on both sides of the South Fork Merced River, the Wawona Covered Bridge is one of only a few covered bridges in the region.
2011 Fall Planning Workbook	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade. In this segment, remains of the U.S. Army Cavalry Camp A. E. Wood document the unique Yosemite legacy of the African-American Buffalo Soldiers and the strategic placement of their camp near the Merced River. The Wawona Covered Bridge is one of the few covered bridges in the region.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including unusually rich evidence of continuous, far-reaching traffic and trade. In this segment, remains of the U.S. Army Cavalry Camp A.E. Wood document the unique Yosemite legacy of the African-American Buffalo Solider and the strategic placement of their camp near the Merced River. The Wawona Historic Resources ORV 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 this high level of integrity.

Rationale: The Wawona Archeological District was added as an independent ORV because it encompasses a complete interrelated landscape of archeological resources that must be managed as a district. This district spans Segments 5-8. Camp A.E. Wood was added as an independent ORV because it represents a specific archeological resource that merits protection under this plan.

SEGMENT 8: South Fork Merced River Below Wawona (Squirrel Creek To Western Park Boundary)

Geologic/Hydrologic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	The South Fork was not included in the 1986 ORVs
1996 Draft Yosemite Valley Housing Plan	Transition from glaciated to un-glaciated canyon Continual whitewater cascades and excellent water quality
2000 and 2005 Merced River Plans	Transition from Paleozoic Era igneous to Cretaceous Period meta-sedimentary rock (among oldest in Sierra) Free-flowing river with continual white-water cascades
2008 Draft ORVs	Glacial processes White water cascades in a deep, narrow canyon through a wild environment; rock fall-driven morphology resulting in deposition of enormous boulders, rapid snowmelt producing high-volume spring flows
2010 Draft ORVs	No Geologic/Hydrologic ORV
Spring 2011 Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2011 Fall Planning Workbook	No Geologic/Hydrologic ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Geologic/Hydrologic ORV
2013 Draft Comprehensive Management Plan and EIS	No Geologic/Hydrologic ORV

Rationale: Transition from Paleozoic Era igneous to Cretaceous Period metasedimentary rock (among oldest in Sierra) was removed as it is not rare, unique, or exemplary. Free-flowing condition is an established river value. Additionally, white water cascades are not rare, unique or exemplary.

SEGMENT 8: South Fork Merced River Below Wawona (Squirrel Creek To Western Park Boundary)

Biological ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Biological ORV
1996 Draft Yosemite Valley Housing Plan	Rare plant species listed (but not Myrica hartwegii); rare wildlife species, including Wawona riffle beetle and rainbow trout
2000 and 2005 Merced River Plans	Diverse riparian areas that are intact and undisturbed by humans; special-status species, including Wawona riffle beetle
2008 Draft ORVs	Riparian and wetland habitats, rare and special-status plant and animal species: willow flycatcher, Sierra Nevada yellow-legged frog, harlequin duck, black swift, and Tompkin's sedge
2010 Draft ORVs	Sierra sweet bay (*Myrica hartwegii*), a rare plant found exclusively on river

	banks in the central Sierra, occurs along the South Fork in these segments.
Spring 2011 Draft Baseline Conditions Report	Same as 2010
2011 Fall Planning Workbook	The Sierra sweet bay (*Myrica hartwegii*), is a rare plant found along the South Fork Merced River.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: *Myrica hartwegii* was added because it is rare and river-dependent, found on the S. Fork river banks and those of a few other streams in the Sierra. Wawona riffle beetle was removed because it is not river related or dependent.

SEGMENT 8: South Fork Merced River Below Wawona (Squirrel Creek To Western Park Boundary)

Recreational ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Recreational ORV
1996 Draft Yosemite Valley Housing Plan	Fishing and wilderness inaccessibility and solitude
2000 and 2005 Merced River Plans	Outstanding opportunities for river-related solitude, enjoyment of natural river sounds, primitive & unconfined recreation in an untrailed, undisturbed environment; river related recreation includes hiking, fishing, & white-water kayaking.
2008 Draft ORVs	Hiking, backpacking, writing, contemplation, nature study, photography, artistic expression, fishing, camping, and picnicking--create memories, traditions, and bonding.
2010 Draft ORVs	Hiking and backpacking, wilderness experiences, solitude, personal reflection, closeness to nature, independence, self-reliance, primitive travel, camping, exploration, & adventure; off-trail hiking and class V kayaking.
Spring 2011 Draft Baseline Conditions Report	The Merced River, spectacular High Sierra landscape, dramatic scenery, natural sounds, and abundant opportunities for solitude combine to produce a variety of exceptional wilderness-oriented recreational activities.
2011 Fall Planning Workbook	No Recreational ORV
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	No Recreational ORV
2013 Draft Comprehensive Management Plan and EIS	No Recreational ORV

Rationale: The Recreation ORV was removed from this segment because the representative activities were not rare, unique, or exemplary.

SEGMENT 8: South Fork Merced River Below Wawona (Squirrel Creek To Western Park Boundary)

Scenic ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Scenic ORV
1996 Draft Yosemite Valley Housing Plan	Views of continual whitewater cascades in a deep and narrow canyon
2000 and 2005 Merced River Plans	Views of continual white-water cascades in the deep and narrow river canyon in untrailed, undisturbed environment
2008 Draft ORVs	Seasonal and daily changes, calm water, rushing cascades, scenic experience encourages interpretation and education
2010 Draft ORVs	Largely inaccessible; no trail crossings; unspoiled Sierra Nevada river valley views dominated by forest-cloaked hills, distant peaks, and an untamed river; some of the wildest views possible in the Sierra Nevada.
Spring 2011 Draft Baseline Conditions Report	Passing through an untrammeled forested wilderness, the South Fork Merced River forms the centerpiece of some of the Sierra's wildest scenery.
2011 Fall Planning Workbook	The South Fork Merced River passes through a vast area of exemplary and wild scenic beauty.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: Views of continual white-water cascades in the deep and narrow river canyon in untrailed, undisturbed environment were removed because they are not rare, unique, or exemplary. The ORV was revised to include the overall scenic beauty of this segment of the river.

SEGMENT 8: South Fork Merced River Below Wawona (Squirrel Creek To Western Park Boundary)

Cultural ORV

1986 Sierra National Forest Draft Forest Land and Resource Management Plan	No Cultural ORV
1996 Draft Yosemite Valley Housing Plan	Archeological sites and historic properties
2000 and 2005 Merced River Plans	Archeological sites and historic resources such as trail segments representing early cavalry activity
2008 Draft ORVs	Trails along Merced for trade and cultural exchange for thousands of years, archeological sites, American Indian spiritual associations
2010 Draft ORVs	No Cultural ORV

Spring 2011 Draft Baseline Conditions Report	No Cultural ORV
2011 Fall Planning Workbook	The Wawona Archeological District encompasses numerous clusters of resources spanning thousands of years of occupation, including evidence of continuous, far-reaching traffic and trade.
2012 Preliminary Concepts Workbook and Draft Baseline Conditions Report	Same as fall 2011
2013 Draft Comprehensive Management Plan and EIS	Same as 2012

Rationale: This ORV was revised to include the entire Wawona Archeological District.

SEGMENTS 1-8

Air Quality and Scientific Resource ORVs

Rationale: Air Quality was included as an ORV in the *1996 Draft Yosemite Valley Housing Plan* and was removed as it was determined to be inconsistent with Interagency Council criteria and not strictly river related or river dependent. The Scientific Resource ORV, also included in the 1996 housing plan and the 2000, and 2005 draft Merced River plans, was removed. It was determined that this ORV was vague and non-specific. Science is inherent to other specific values.

* The 2008 *Draft ORVs* were formulated under a "corridorwide" scale. Examples were cited but not intended to be all inclusive

APPENDIX N

DRAFT BIOLOGICAL ASSESSMENT

APPENDIX N

BIOLOGICAL ASSESSMENT

Biological Assessment on the Merced River Plan/DEIS

National Park Service
Department of the Interior
November 2012

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TABLE OF CONTENTS

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CHAPTER I. INTRODUCTION

Purpose and Need

The National Park Service in Yosemite has prepared the *Merced Wild and Scenic River Comprehensive Management Plan/Draft Environmental Impact Statement* (*Merced River Plan/DEIS*) to provide a comprehensive management plan for the protection of the Merced River's free-flowing condition, water quality, and the values that make the river worthy of designation. The purpose of this Biological Assessment is to review the *Merced River Plan /DEIS* in sufficient detail to determine effects of the plan on federal and state-listed threatened or endangered species, federal and state species of concern, state-listed rare species, and species that are locally rare or threatened. All of these species are also referred to as special-status species throughout this document.

The *Merced River Plan/DEIS* aims to protect and further restore degraded areas of the river to its natural free-flowing condition and encourage resource-based recreational and educational opportunities along the river corridor. The plan would contribute to subsequent planning that would manage crowding through careful design, relocation, or removal of specific facilities and by setting use limits, dispersing visitor impacts, and establishing other measures to protect river resources and the diversity of visitor experiences. The plan also proposes to reduce traffic congestion by identifying optimal road locations and facilities, parking areas, turnouts, and other transportation facilities in the river corridor. Many of these functions would move to the El Portal Administrative Site on the western boundary of the park.

This Biological Assessment will evaluate the Preferred Alternative in the *Merced River Plan/DEIS*, Alternative 5. The areas that could be affected by the Preferred Alternative include East and West Yosemite Valley, Wawona, Merced Lake High Sierra Camp, El Portal and Old El Portal. These areas are designated as the project area. Detailed maps of the project area are available in Vol. I, *Merced River Plan/DEIS*.

This Biological Assessment will:

- Evaluate and document the effects of the Preferred Alternative on special-status species or their critical habitat that are known to be or could be present within the project area

- Determine the need for consultation and conference with the U.S. Fish and Wildlife Service (USFWS)

- Conform to requirements of the Endangered Species Act (19 USC 1536 [c], 50 CFR 402) and the National Environmental Policy Act (42 USC 4321 et seq., implemented at 40 CFR Parts 1500-1508)

U.S. Fish and Wildlife Service Consultation

The Endangered Species Act (Section 7 [a][2]) directs federal agencies to consult with the responsible agency (in this case, the USFWS) to determine whether proposed actions are likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat. The NPS initiated informal consultation with the USFWS and obtained an updated species list from the USFWS on October 18, 2012. NPS obtained lists of federally listed endangered or threatened species within the Mount Lyell, Merced Peak, Sing Peak, Timber Know, Half Dome, El Capitan, Wawona, Mariposa Grove, El Portal, and Kinsley U.S. Geological Survey quadrangles that may be present or may be affected by actions proposed in the *Merced River Plan/DEIS*. Based on these lists and professional judgment by the park staff, seven federally listed threatened, endangered, proposed, or candidate species have been identified as known to occur or as having the potential to occur in the study area: one invertebrate species, two amphibian species, and three mammal species, and one plant species (see **table N-1**). Consultation with the USFWS will continue throughout the environmental compliance process for the Merced River Plan, and the NPS will consult with the USFWS to obtain an updated list of federally endangered or threatened species prior to project implementation.

Other species considered in this biological assessment include species identified by the California Department of Fish and Game (CDFG) as endangered, threatened, or a candidate species; and CDFG species of concern, rare species, or fully protected species. Additionally, species considered rare by the National Park Service are also included in this biological assessment. Based on these lists, previous studies, recent surveys, and professional judgment by the park staff, 33 special status wildlife species are known to occur or have the potential to occur in the study area: one invertebrate species (beetle), one fish species, three amphibian species, 14 bird species, and 14 mammal species.

Botanical surveys have identified one federal candidate plant species and two state-listed plants within the Merced River corridor in Yosemite. Therefore, for purposes of this analysis, special status plant species generally include mainly those species identified as such by the park. Park-designated sensitive plant species are those that have (1) extremely limited distributions in the park and may represent relict populations from past climatic or topographic conditions; or (2) may be at the extreme extent of their range in the park or represent changes in species genetics. These species may be included on lists such as the CNPS Inventory of Rare and Endangered Plants. 50 special status plant species are known to occur or have the potential to occur in the study area.

Species Evaluated in this Biological Assessment

Federally Listed Species

The Endangered Species Act defines an endangered species as any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Of the Federally listed species that could be affected by the *Merced River Plan/DEIS*, one is endangered: Sierra Nevada bighorn sheep *(Ovis canadensis sierrae)*; and one is threatened: Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*.

TABLE N-1: SPECIES CONSIDERED IN THIS BIOLOGICAL ASSESSMENT

Federal Threatened Species

Invertebrates

Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*

Federal Candidate Species

Mammals

Pacific fisher *(Martes pennanti pacifica)*

Reptiles and Amphibians

Yosemite toad *(Bufo canorus*)
Sierra Nevada yellow-legged frog (*Rana sierrae*)

Plants

Whitebark pine (*Pinus albicaulis*)

California State Endangered Species

Birds

Willow flycatcher *(Empidonax traillii)*
Bald eagle *(Haliaeetus leucocephalus*)

Mammals

Sierra Nevada bighorn sheep *(Ovis canadensis sierrae)*

California State Threatened Species

Mammals

California wolverine (*Gulo gulo*)
Sierra Nevada red fox (*Vulpes vulpes necator*)

California State Fully Protected Species

Birds

Golden eagle (*Aquila chrysaetos*)
Peregrine Falcon (*Falco peregrinus*)
Bald eagle (*Haliaeetus leucocephalus)*)

California State Rare Species

Plants

Thompkins' sedge (*Carex tompkinsii*)
Congdon's woolly-sunflower *(Eriophyllum congdonii)*
Congdon's lewisia *(Lewisia congdonii)*

California State Species of Special Concern

Birds

Northern goshawk *(Accipiter gentilis*)
Long-eared owl *(Asio otus)*
Vaux's swift *(Chaetura vauxi)*
Northern harrier *(Circus cyaneus)*
Olive-sided flycatcher *(Contopus cooperi)*
Black swift (*Cypseloides niger*)
Yellow warbler *(Setophaga petechia)*
Harlequin duck *(Histrionicus histrionicus)*
Great gray owl *(Strix nebulosa)*
California spotted owl *(Strix occidentalis occidentalis)*

TABLE N-1: SPECIES CONSIDERED IN THIS BIOLOGICAL ASSESSMENT (CONTINUED)

California State Species of Special Concern (cont.)

Fish

Hardhead *(Mylopharodon conocephalus)*

Mammals

Pallid bat *(Antrozous pallidus)*
Sierra Nevada mountain beaver *(Aplodontia rufa californica*)
Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*
Spotted bat *(Euderma maculatum)*
Greater western mastiff bat *(Eumops perotis californicus)*
Western red bat *(Lasiurus blossevillii)*
Sierra Nevada snowshoe hare *(Lepus americanus tahoensis)*
Western white-tailed jackrabbit *(Lepus townsendii townsendii)*
Pacific fisher *(Martes pennanti pacifica)*
Mount Lyell shrew *(Sorex lyellii)*
American badger *(Taxidea taxus)*

Reptiles and Amphibians

Yosemite toad *(Bufo canorus*)
Western pond turtle *(Emys marmorata*)*
Mount Lyell salamander *(Hydromantes platycephalus)*
Foothill yellow-legged frog *(Rana boylii)*
Sierra Nevada yellow-legged frog *(Rana sierrae)*

Park Rare Species

Plants

Spurred snapdragon *(Antirrhinum leptaleum)*
Lemmon's wild ginger *(Asarum lemmonii)*
California bolandra *(Bolandra californica)*
Threadleaf beakseed *(Bulbostylis capillaris)*
Mono Hot Spring evening primrose (*Camissonia sierrae* ssp. *alticola*)
Sierra suncup (*Camissonia sierrae* ssp. *sierrae*)
Buxbaum's sedge *(Carex buxbaumii)*
Silvery sedge (*Carex canescens*)
Cleft sedge (*Carex fissuricola*)
Yosemite sedge (*Carex sartwelliana*)
Thompkins' sedge (*Carex tompkinsii)*
Bolander's woodreed *(Cinna bolanderi)*
Narrow leaf collinsia *(Collinsia linearis)*
Short-bracted bird's beak (*Cordylanthus rigidus* ssp. *brevibracteus*)
Mountain lady's slipper (*Cypripedium montanum*)
Stream orchid *(Epipactis gigantea)*
Congdon's wooly sunflower (*Eriophyllum congdonii*)
Purple fawn-lily *(Erythronium purpurascens*)
Northern mannagrass (*Glyceria borealis*)
California sunflower (*Helianthus californicus*)
Common mare's tail (*Hippuris vulgaris*)
Redray alpinegold (*Hulsea heterochroma*)
Western quillwort (*Isoetes occidentalis*)
Sierra laurel *(Leucothoe davisiae)*
Congdon's lewisia (*Lewisia congdonii*)
False pimpernel *(Lindernia dubia* var. *anagallidea)*
Tanoak (*Lithocarpus densiflorus* var. *echinoides*)
Northern bugleweed (*Lycopus uniflorus*)
Yellow and white monkeyflower (*Mimulus bicolor*)
Inconspicuous monkeyflower *(Mimulus inconspicuus)*
Cutleaf monkeyflower (*Mimulus laciniatus*)

TABLE N-1: SPECIES CONSIDERED IN THIS BIOLOGICAL ASSESSMENT (CONTINUED)

Park Rare Species (cont.)
Pansy monkeyflower *(Mimulus pulchellus)*
Sierra sweet-bay *(Myrica hartwegii)*
California bog asphodel *(Narthecium californicum)*
Azure penstemon *(Penstemon azureus* ssp. *angustissimus)*
Purdy's foothill penstemon *(Penstemon heterophyllus* var. *purdyi)*
Tansy leafed phacelia *(Phacelia tanacetifolia)*
Coleman's piperia *(Piperia colemanii)*
Torrey's popcornflower *(Plagiobothrys torreyi* var. *torreyi)*
Nuttall's pondweed *(Potamogeton epihydrus* ssp. *nuttallii)*
Valley oak *(Quercus lobata)*
Wood saxifrage *(Saxifraga mertensiana*)
Oregon saxifrage (*Saxifraga oregana*)
Bolander's skullcap *(Scutellaria bolanderi)*
Clark's ragwort *(Senecio clarkianus)*
Small bur reed *(Sparganium natans)*
Sierra bladdernut *(Staphylea bolanderi)*
Narrowleaf wakerobin *(Trillium angustipetalum)*
California red huckleberry (Vaccinium parvifolium)
Hall's wyethia *(Wyethia elata)*
*Believed to be extirpated from the Merced River corridor.

The Sierra Nevada bighorn sheep formerly ranged throughout the high elevations of the Sierra Nevada. By the beginning to the 20th century, however, their numbers had been decimated by overhunting, competition for forage with domestic sheep, and especially by diseases contracted from domestic sheep. By 1999, fewer than 200 Sierra Nevada bighorn sheep were left in the entire range, prompting its listing that year as endangered. Currently, the Sierra Nevada bighorn sheep occurs primarily along the Sierra Crest in the northeast portion of Yosemite Park. Most of the herd inhabits Forest Service land adjacent to the park.

The Valley elderberry longhorn beetle was listed by the USFWS as threatened on August 8, 1980. This listing was primarily a result of destruction of riparian habitat in the San Joaquin Valley that removed the beetle's host plant, the elderberry (*Sambucus* sp.). Critical habitat has been designated for the beetle in two areas: along the American River near the Sacramento metropolitan area and along Putah Creek in Solano County. However, the beetle also occurs up to 3,000 feet in elevation in the Sierra Nevada.

Special-Status Species

Special-status species that could be affected by this plan are listed in table N-1. There are 50 special status plant species and 33 special status wildlife species known to occur or having the potential to occur within Yosemite National Park's Merced River corridor. The species on this list include the federally listed species in the ten U.S. Geological Survey quadrangles that encompass the project area for the plan (see USFWS Consultation), species listed in the California Natural Diversity Data Base, and "park rare" plants identified by National Park Service. Park rare plants include those that are:

- locally rare natives

- listed by the California Native Plant Society
- endemic to the park or local vicinity
- at the furthest extent of their range
- of special importance to the park (identified in legislation or park management objectives)
- the subject of political concern or unusual public interest
- vulnerable to local population declines
- subject to human disturbance during critical portions of their life cycle

There is no classification of "park rare" for any wildlife species.

Species Removed from Further Analysis

The following species are on the list of "Endangered and Threatened Species that may occur or be Affected by Projects in the USFWS 7 ½ Minute Quads" that was provided by the USFWS. However, the National Park Service has determined that they would not be affected by the *Merced River Plan/DEIS* because they do not occur in the project area nor were they historically found in the project area. Therefore, there is no effect on these species from the Preferred Alternative in the *Yosemite Valley Plan/DEIS*, nor are they potentially indirectly or cumulatively affected by the Preferred Alternative. These species will not be evaluated further in this Biological Assessment.

- **Delta smelt, *Hypomesus transpacificus* (Federal Threatened)**
- **Lahontan cutthroat trout, *Oncorhynchus (=Salmo) clarki henshawi* (Federal Threatened)**
- **Paiute cutthroat trout, *Oncorhynchus (=Salmo) clarki seleniris* (Federal Threatened)**
- **Central Valley steelhead, *Oncorhynchus mykiss* (Federal Threatened)**
- **California red-legged frog, *Rana draytonii* (Federal Threatened)**

Critical Habitat

Critical habitat is a specific area or type of area that is considered to be essential for the survival of a species, as designated by the USFWS under the Endangered Species Act. No critical habitat occurs in Yosemite National Park or the El Portal Administrative Site.

CHAPTER II. CURRENT MANAGEMENT DIRECTION

Authorities

The following legislation and policies address the management of special-status species in the park: the National Park Service Organic Act, the Endangered Species Act, the National Environmental Quality Act, the California Endangered Species Act, the Migratory Bird Conservation Act, the Fish and Wildlife Coordination Act, the Wild and Scenic Rivers Act, and the Wilderness Act.

The USFWS normally takes the lead departmental responsibility of coordinating and implementing provisions of the Federal Endangered Species Act for all listed endangered, threatened, and candidate species. This Biological Assessment is prepared in accordance with Section 7 of the Federal Endangered Species Act of 1973, as amended, as part of the consultation process with the USFWS.

Policy and Program Objectives

The following National Park Service policies and program objectives prescribe the management of special-status species:

- The *Natural Resources Management Guideline* NPS-77 (1991) states:

  "Management affects the distribution, abundance, and ecological relationships of and among species. Whereas preservation can be accomplished by a zoo, botanical garden, or other non-natural refugium, the National Park Service's goal is the long-term preservation of species and their ecological role and function as part of a "natural ecosystem." It is, therefore, critical that ecological aspects of management prevail in dealing with threatened and endangered species. An understanding of factors limiting the distribution and abundance of the species of concern must be well understood and incorporated into any management action."

- National Park Service *Management Policies* (1988) states:

  "Consistent with the purposes of the Endangered Species Act (16 USC 1531 et seq.), the National Park Service will identify and promote the conservation of all federally listed threatened, endangered, or candidate species within park boundaries and their critical habitats."

  "The National Park Service also will identify all state and locally listed threatened, endangered, rare, declining, sensitive, or candidate species that are native to and present in the parks, and their critical habitats. These species and their critical habitats will be considered in National Park Service planning activities."

- The 1980 *General Management Plan* for Yosemite states:

  "Protect threatened and endangered plant and animal species and reintroduce, where practical, those species eliminated from the natural ecosystems."

CHAPTER III. THE MERCED RIVER PLAN/DEIS

The Preferred Alternative – Enhanced Visitor Experiences and Essential Riverbank Restoration

The Preferred Alternative of the *Merced River Plan/DEIS* would include significant restoration within 100 feet of the river and in meadow and riparian areas, maintaining daily visitation in Yosemite Valley to accommodate the same peak levels observed in recent years, reducing unnecessary facilities and services, and converting facilities from administrative use to public use where feasible. This alternative would restore approximately 203 acres of currently disturbed or developed habitats throughout the Merced River corridor to natural conditions by removing infrastructure and development from sensitive areas such as meadows, riparian habitat, and riverbanks. Much of the development within 100 feet from the ordinary high water mark of the Merced River would be removed under this alternative. 6,135 linear feet of riprap would be removed from the banks of the Merced River. Targeted infrastructure within the bed and banks of the river would be removed. Sugar Pine Bridge would be removed to promote free-flowing conditions of the river and channel complexity would be enhanced below other bridges. Restoration actions also include filling ditches and removing informal trails from meadows to improve hydrology and reduce meadow fragmentation. Collectively, these actions would enhance meadow and floodplain connectivity and the free-flowing condition of the river.

Actions to manage visitor use and facilities under Alternative 5, specifically those concerning vehicle access and overnight accommodations, would result in a 2% increase in lodging accommodations. The campsite inventory would increase by 29% in the Merced River corridor and 37% in Yosemite Valley. 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 former Upper Rivers Campground area, and east of El Capitan Picnic Area at Eagle Creek. Under Alternative 5, there would be a net increase of 13% in Yosemite Valley overnight use. This would largely result from the increase in units at Curry Village. Management actions related to lodging would focus on removing lodging from the ordinary high water mark and Housekeeping Camp, and slightly reducing lodging in wilderness. Tent cabins in the Boys Town area would be replaced with hard-sided lodging in Curry Village to increase the availability of year-round accommodations.

Alternative 5 would restore approximately 203 acres of vegetation, including 40.52 acres of wetlands, as a result of actions common to Alternatives 2-6 in conjunction with actions specific to Alternative 5. Actions to manage visitor use and facilities would result in the loss of approximately 36.89 acres of vegetation and 2.67 acres of wetlands as a result of actions specific to Alternative 5.

For a detailed description of the Preferred Alternative, refer to Vol. I, Chapter 9 of the *Merced River Plan/DEIS* (NPS 2012).

CHAPTER IV. EXISTING ENVIRONMENT

Habitat Descriptions

The Merced River and Yosemite National Park

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. It is one of 15 major river systems in the Sierra Nevada mountain range of California. Originating in the alpine peaks of the central Sierra Nevada, the river flows west for 145 miles to its confluence with the San Joaquin River in the Central Valley of California, encompassing a drainage basin of about 1,700 square miles. The first 122 miles of the Merced River, beginning at its Sierran headwaters, are designated as wild and scenic; the National Park Service manages 81 miles of the river through Yosemite National Park and the El Portal Administrative Site, including both the main stem and the South Fork Merced River (together referred to as *the Merced River*). In Yosemite National Park, the main stem of the Merced River flows freely through a wilderness landscape of alpine peaks, glacially carved valleys, and high-elevation meadows. As the gradient lessens into Yosemite Valley, the Merced River meanders through the rich meadow and riparian habitat. These wetlands and riparian areas are distinct and important types of vegetation communities that contribute to the outstandingly remarkable biological river values as well as values to biological communities.

Yosemite National Park, one of the largest and least-fragmented habitat blocks in the Sierra Nevada range, supports a diverse and abundant assemblage of wildlife. It plays an important role in protecting the long-term survival of certain species and the overall biodiversity of wildlife in the Sierra Nevada region. The Merced River corridor also serves an essential ecological role in linking wildlife habitats across the park's landscape and gradients of elevation.

Yosemite Valley is a glacier-carved valley with sheer granite cliffs rising over 2,000 feet above the valley floor. Alluvial deposits are found to a depth of about 2,000 feet below the soil surface, creating a huge underground aquifer. Habitats in Yosemite Valley can be loosely grouped into meadow, riparian, and upland. Mammals resident or transient in Yosemite Valley include deer mouse, California ground squirrel, western gray squirrel, broad-footed mole, Botta's pocket gopher, mink, ringtail, raccoon, coyote, bobcat, mule deer, mountain lion, and black bear.

Regional Vegetation and Habitats

The major vegetation zones of the Sierra Nevada region form readily apparent, large-scale, north-south elevational bands along the axis of the Sierra Nevada range. In the Yosemite region, these vegetation zones include foothill-woodland, lower montane forest, upper montane forest, subalpine forest, and alpine zones; they are distributed from the lowest elevations on the western boundary of the park to the highest elevations from 9,500 feet along the crest of the Sierra Nevada range. Major east-west watersheds that dissect the Sierra Nevada range into steep canyons form a secondary pattern of vegetation.

Merced River Habitats

All eight major vegetation types supported by Yosemite National Park occur within the Merced River corridor and are presented in **table N-2**, below. It is estimated that half of all plant species in the park occur within the Merced River corridor. The *Special Status Plant Species Report* (NPS, 2011b) concluded that the characteristic pattern of special status species occurrence along the Merced River corridor within Yosemite National Park was found to be within unique habitat types that are often restricted in size. These habitat types are typically associated with specific kinds of water availability, such as waterfall spray zones, braided river channel oxbow cutoffs, gravel bars resulting from periodic flooding, water seepage on rock walls, vernal pools resulting from snowmelt flooding, and the average high water margin of streams and rivers. Although riparian and wetland habitats are not classified independently under the eight broad-scale vegetation types used in the parkwide vegetation map of the Merced River Plan/DEIS, their value as biological communities warrants a thorough discussion. Therefore, they are discussed in-depth below. Additionally, because meadow habitats are integral in connecting upland and aquatic habitats, they are also discussed in-depth in this assessment.

TABLE N-2: VEGETATION TYPES WITHIN THE MERCED RIVER CORRIDOR

Vegetation Type	Area per Segment (acres)								Total
	1	2	3	4	5	6	7	8	
Alpine (9,500 to 11,800 feet)*	87.8	0	0	0	6.5	0	0	0	94.3
Meadow (2,000 to 11,000)	1,801.3	324.1	67.6	28.8	389.0	0	140.6	0.9	2,752.3
Chaparral (2,000 to 10,000 feet)	1,669.1	991.4	2,270.6	74.9	694.0	0	166.4	66.6	5,933.0
Subalpine Coniferous Forest (8,000 to 9,500 feet)	9,610.4	45.8	0	0	3,108.9	0	0	0	12765.1
Upper Montane Coniferous Forest (6,000 to 8,000 feet)	16,525.7	3,697.0	1,572.0	0	11,611.8	23.3	990.5	28.4	34,448.7
Lower Montane Coniferous Forest (3,000 to 6,000 feet)	3,505.6	7,248.5	4,785.3	151.4	6,010.4	72.0	4,969.0	1,980.8	28,723.0
Lower Montane Broadleaf Forest (3,000 to 6,000 feet)	461.6	3,331.4	2,982.7	569.7	816.7	3.4	761.1	397.0	9,323.6
Foothill Woodland (1,800 to 3,000 feet)	0	0	9.8	324.8	0	0	0	0	334.6
Barren (1,800 to 11,800 feet)	14,143.4	2,319.5	455.7	27.6	2586.4	2.9	170.2	2.6	19,708.3
Developed	0.3	150.0	59.3	54.5	8.1	0.2	82.2	10.3	364.9

*Elevation ranges are approximated

SOURCE: NPS 1997; NPS 2007x

Meadows. Meadow habitats within the Merced River corridor include alpine, subalpine, and montane meadows and seeps. The meadows in Yosemite National Park play a particularly critical role in the Merced River ecosystem. There are approximately 2,752.3 acres of meadow habitat within the Merced River corridor. Meadows serve as a transition zone, linking aquatic and riparian habitats along the Merced River to drier upland habitats such as California black oak. High spring flows create wet areas in side channels, low-lying wetlands, meadows, and cutoff channels. These areas support the

concentration of organic matter, nutrients, microorganisms, and aquatic invertebrates throughout the relatively dry summer. When the flush of winter or spring flooding occurs, this stored aquatic biomass is washed into the main river channel, forming the base of the aquatic food chain.

Meadows in Yosemite Valley were maintained in the past by natural flooding and by frequent, low-intensity broadcast fires set by Native American residents of the Valley. Today, prescribed fire is used as a tool to clear the meadows of encroaching conifers and release nutrients into the soil.

Special-status species that use meadows, seeps, and other wetlands in Yosemite Valley for foraging and/or reproduction include the Yosemite toad, Mount Lyell salamander, western pond turtle, northern harrier, olive-sided flycatcher, peregrine falcon, great gray owl, special-status bats, California wolverine, Mount Lyell shrew, Sierra Nevada red fox, special-status sedges and grasses, stream orchid, purple fawnlily, California sunflower, false pimpernel, among others (see table N-3 for a complete listing of special-status species that have been found or could occur in Yosemite Valley).

Riparian Habitats. There are approximately 180.7 acres of riparian habitat within the Merced River corridor. Riparian zones extend outward from the banks of the Merced River and its tributaries toward adjacent meadow and forest communities. Broadleaf deciduous trees such as white alder, black cottonwood, and willow characterize riparian zones in Yosemite Valley. Riparian vegetation along moving water is frequently disturbed and constantly responds to the deposition and removal of soil. Riparian vegetation actively colonizes new areas and is made up of a wide range of ages and types of vegetation. This in turn provides a wide range of foraging, nesting, and resting opportunities for wildlife.

Special-status species that are representative of riparian habitats in Yosemite Valley include amphibians (foothill yellow-legged frog, Sierra Nevada yellow-legged frog), reptiles (western pond turtle), birds (yellow warbler, willow flycatcher, harlequin duck), and mammals (special-status bats, Mount Lyell shrew), among others. Special-status plants occurring in riparian habitats include the Sierra sweet bay, stream orchid, purple fawnlily, and Sierra laurel, among others (see Table N-3 for a complete listing of special-status species that have been found or could occur in Yosemite Valley).

Upland Habitats. Upland plant communities are found where soil moisture conditions are average to dry and where soils are not periodically flooded or saturated. Upland habitats within the Merced River corridor are comprised of Chaparral, Foothill Woodland, Lower Montane Broadleaf Forest, Lower Montane Coniferous Forest, Subalpine Coniferous Forest, Alpine, and Barren (table N-2, above). In-depth descriptions of each habitat type within each segment of the Merced River are described in Chapter 9 of the Merced River Plan/DEIS (NPS, 2012).

Segment 1

At its headwaters, the Merced River begins in the lower alpine/subalpine forest zone. The river then descends through the upper montane forest zone and concludes in Little Yosemite Valley within the lower montane forest zone. Vegetation in the upper main stem river corridor is classified into seven broad vegetation types: meadow, chaparral, lower montane broadleaf forest, lower montane coniferous forest, upper montane coniferous forest subalpine coniferous forest, and alpine plant

communities. Special-status species that are representative in upland habitat within the Merced River corridor above Nevada Falls include northern goshawk, golden eagle, northern harrier, yellow warbler, California spotted owl, special-status bat species, California wolverine, western white-tailed jackrabbit, Mount Lyell shrew, Sierra Nevada red fox, and Pacific fisher. Special-status plants occurring in upland habitat within this segment includes California bolandra, redray alpinegold, and Coleman's piperia (see table N-3 for a complete listing of special-status species that have been found or could occur in Segment 1).

Segment 2

Yosemite Valley is a broad, flat-bottomed valley formed by glaciation and subsequent alluvial deposition. The river corridor includes the Merced River in addition to portions of Illilouette Creek, Tenaya Creek, Yosemite Creek, Sentinel Creek, Ribbon Creek, and Bridalveil Creek. Upland habitats cover about 75% of Yosemite Valley and are dominated by mixed conifer, canyon live oak, California black oak, and microhabitats on steep granite walls (Acree 1994).

Mixed conifer communities in Yosemite Valley are typically dominated by ponderosa pine, but may have significant numbers of incense-cedar, Douglas-fir, white fir, California black oak, and an occasional sugar pine. The mixed conifer community is naturally adapted to low-intensity, frequent fires. Nearly 100 years of fire suppression has resulted in a change from open forest to dense thickets of shade-tolerant tree species such as incense-cedar and white fir. Under natural conditions, the return interval for fire is estimated at 8 to 12 years (NPS 1990). Most undeveloped, mixed conifer areas of Yosemite Valley are now managed through a combination of mechanical removal of hazardous fuel and prescribed burning. These treatments simulate the natural and Native American – maintained fire regimes of the Valley and help decrease forest densities to more natural levels.

Canyon live oak communities grow on both north- and south-facing talus slopes. They often form pure or almost pure stands. Fires in this community are infrequent but intense, with a fire return interval of 20 to 50 years on south-facing slopes. Most trees and shrubs in this community resprout after fires.

In addition to being a component of the mixed conifer community, California black oaks in Yosemite Valley form pure, open stands of large trees with a herbaceous understory. These pure stands are found between the upland forest communities and lower-lying meadow and riparian communities. These stands are unique to the Valley due to thousands of years of Native American activities, including annual burning and removal of young conifers. California black oaks also grow in dense stands on talus slopes near drainages.

Special-status species that are representative of upland habitats in Yosemite Valley include Special-status species that are representative in upland habitat within Yosemite Valley include long-eared owl, Vaux's swift, northern harrier, olive-sided flycatcher, yellow warbler, bald eagle, great gray owl, California spotted owl, special-status bat species, Sierra Nevada mountain beaver, western white-tailed jackrabbit, and American badger. Special-status plants occurring in upland habitat within this segment includes Sierra suncup, Buxbaum's sedge, short-bracted bird's beak, purple fawnlily, tanoak,

monkeyflowers, penstemons, redray alpinegold, and wood saxifrage, among others (see table N-3 for a complete listing of special-status species that have been found or could occur in Yosemite Valley).

Segment 3 and 4

The Merced River gorge travels through the lower montane forest zone and into the foothill-woodland zone, where it enters the El Portal area. Vegetation in the Merced River gorge and El Portal river corridor is classified into four broad vegetation types: chaparral, foothill woodland, lower montane broadleaf forest, and lower montane coniferous forest. Valley oak woodland (foothill woodland) occurs in the El Portal area.

El Portal lies in the Merced River canyon at 2,000 feet in elevation. The Merced River in this segment is lined with a narrow band of riparian vegetation with occasional wider floodplains. A dense mosaic of chaparral and foothill woodland communities lines the steep canyon walls. Many factors shape this unique biological environment, including natural floods and lightning-ignited fire. Soils derived in the contact zone between metamorphic and granitic rock form a unique substrate for vegetation. Many special-status plants are concentrated in this unique area. Steep canyon walls that are almost inaccessible to human passage create secluded refuges for wildlife. Extremely hot and dry summer weather places a critical importance on riparian habitat for many wildlife species.

Special-status species that have been found or could occur in El Portal include the long-eared owl, bald eagle, and Townsend's bigeared bat. Special-status plants with the potential to occur in this segment include Thompkin's sedge, mountain lady's slipper, narrowleaf collinsia, Congdon's woolly-sunflower, tanoak, Congdon's lewisia, northern bugleweed, small flowered monkeyflower, valley oak, and Sierra bladdernut (see table N-3 for a complete listing of special-status species that have been found or could occur in El Portal).

Segments 5 and 8

These segments include nearly a full range of environments typical to the Sierra Nevada. Vegetation zones along the upper South Fork (Segment 5) include the alpine, subalpine, upper montane forest, and lower montane forest zones. Vegetation in the upper South Fork is classified into six broad vegetation types: meadow, chaparral, lower montane broadleaf forest, lower montane coniferous forest, upper montane coniferous forest and subalpine coniferous forest.

Vegetation zones along the lower South Fork (Segment 8) include the lower montane forest and foothill-woodland zones. Vegetation in the lower South Fork is classified into three broad vegetation types: chaparral, lower montane broadleaf forest, and lower montane coniferous forest. These segments of the river are designated as wilderness.

Special-status species with the potential to occur within these segments include the northern goshawk, golden eagle, long-eared owl, olive-sided flycatcher, yellow warbler, California spotted owl, special-status bats, Sierra Nevada mountain beaver, California wolverine, Sierra Nevada snowshoe hare, western white-tailed jackrabbit, Pacific fisher, and Sierra Nevada red fox. Special-status upland plants with the potential to occur along the upper and lower South Forks include the small flowered monkeyflower.

Segments 6 and 7

Major vegetation zones in the central South Fork (Wawona) include the upper montane forest and lower montane forest zones. Vegetation in the central South Fork is classified into four broad categories: meadow, chaparral, lower montane broadleaf forest, and lower montane coniferous forest.

Special-status species that are representative of these areas include the golden eagle, long-eared owl, Vaux's swift, northern harrier, olive-sided flycatcher, bald eagle, great gray owl, California spotted owl, special-status bats, Sierra Nevada mountain beaver, western white-tailed jackrabbit, pacific fisher, and American badger. Special-status plants representative of these areas include spurred snapdragon, mountain lady's slipper, narrow leaf collinsia, small flowered monkeyflower, Sierra sweet-bay, California red huckleberry, and Hall's mule ears (see **table N-3** for a complete listing of special-status species that have been found or could occur in the Wawona area).

Species Accounts

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS

Scientific Name Common Name	Listing Status: Federal/State/ CNPS	General Habitat	Potential to Occur in Project Area Segment
Invertebrates			
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	Breeds and forages exclusively on elderberry shrubs (*Sambucus* spp.) typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley and foothill habitats below 3,000 feet in elevation.	3,4,
Fish			
Mylopharodon conocephalus Hardhead	CSC	Inhabits larger middle- and low elevation streams and rivers, from sea level to 4,750 feet. Typically found in undisturbed streams with clear, deep pools that have sand-gravel-boulder substrates and slow water velocities.	4,6,7
Amphibians			
Hydromantes platycephalus Mount Lyell salamander	CSC	Occurs in massive rock areas between 4,000 and 12,139 feet in elevations, in rock fissures, seeps, shade, and low-growing plants. Commonly found in talus slopes of granite where water is flowing. Also found near streams and within the spray zones of waterfalls, under rocks and moss.	1,2,5
Anaxyrus canorus Yosemite toad	FC/CSC	Restricted to wet mountain meadows, lakes, ponds, and shallow spring channels in the central high Sierra Nevada, between 4,790 - 11910 feet. Wet meadow habitat is the focal habitat for this species	1,5
*Rana boylii** Foothill yellow-legged frog	CSC	Primarily found in streams with riffles, rocky substrates and open banks from sea level to 6,390 feet.	2,3,4,6,7,8
Rana sierrae Sierra Nevada yellow-legged frog	FC/CCE/CSC	High mountain lakes, ponds, tarns and streams at elevations ranging from 5,500 to 12, 000 feet; rarely found more than 3 feet from water.	1,5

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Federal/State/ CNPS	General Habitat	Potential to Occur in Project Area Segment
Reptiles			
*Emys marmorata** Western pond turtle	CSC	Inhabit a wide range of permanent and ephemeral aquatic habitats including ponds, marshes, rivers, streams, and ditches to about 6,700 feet, but are uncommon anywhere above 5,000 feet. Prefers open, grassy south-facing slopes for nest sites.	2,3,4,6,7,8
Birds			
Histrionicus histrionicus Harlequin duck	CSC	Breeds along large, swift-moving mountain rivers with vegetated banks for cover. At the conclusion of the breeding season, they move back to the coast where they forage in intertidal areas.	1-8
Accipiter gentilis Northern goshawk	CSC	Favors moderately dense coniferous forests broken by meadows, and other openings, between 5,000 and 9,000 feet in elevation. Typically nest in mature conifer stands near streams. Forage in mature and old-growth forests that have relatively dense canopies and open understories, but also hunt among a variety of vegetative cover, including meadow edges.	1,5
Aquila chrysaetos *Golden eagle*	CFP	Forages in open terrain such as grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats; nests in canyons and large trees in open habitats. In the Sierra Nevada, golden eagles favor grasslands and areas of shrubs or saplings, and open-canopied woodlands of young blue oaks.	1-8
Circus cyaneus Northern harrier	CSC	Favors open areas such as grasslands, meadows, wetlands, and agricultural clearings. Rarely seen migrant that passes through Yosemite.	2,7
Haliaeetus leucocephalus Bald eagle	FD/CE/CFP	Nests in tall trees, usually over 100 feet in height, or on cliffs, usually near water. Favor lakes and rivers with abundance prey (mostly fish).	2,3,4,7
Falco peregrinus Peregrine falcon	CFP	Nests on vertical cliff habitat, with large potholes or ledges, that is inaccessible to land predators. Hunts in a wide variety of habitats including meadows, woodlands, marshes, and mudflats.	1,2,3,5,7
Asio otus Long-eared owl	CSC	In the Sierra Nevada, this species is found from blue oak savannah up to ponderosa pine and black oak habitats, usually in association with riparian habitats.	2,3,4,5,6,7,8
Strix nebulosa Great gray owl	CE	Entire California population of this species is restricted to the Yosemite region. Breeds in mixed conifer/red fir forests bordering meadows. Winters in mixed conifer down to blue oak woodlands.	2,7
Strix occidentalis occidentalis California spotted owl	CSC	Strongly associated with areas of mature and old forest with thick dense canopy closure that contains many dense, old, live trees and snags and fallen logs.	1,2,3,5,7
Chaetura vauxi Vaux's swift	CSC	Inhabits redwood and Douglas-fir habitats. Utilizes large hollow trees and snags, especially tall, burned-out stubs for nest sites. Breeding occurs in Yosemite Valley, usually in forested habitat near meadows.	2,3,7,8

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Federal/State/ CNPS	General Habitat	Potential to Occur in Project Area Segment
Birds (cont.)			
Cypseloides niger borealis Black swift	CSC	In Yosemite, black swifts only nest near or behind waterfalls, through elsewhere in their range nests are found on sea cliffs or other sheer rock faces.	2
Contopus cooperi Olive-sided flycatcher	CSC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Winters at forest edges and clearings where tall trees or snags are present.	1,2,5,7
Empidonax traillii Willow flycatcher	CE	Breeds in moist, shrubby areas, often with standing or running water. Winters in shrubby clearings and early successional growth. Deciduous trees and shrubs interspersed with open areas enhances the quality of foraging habitat	2,6,7
Setophaga petechia Yellow warbler	CSC	Prefers riparian woodlands, but also breeds in chaparral, ponderosa pine, and mixed conifer habitats with substantial amounts of brush.	1-8
Mammals			
Sorex lyelli Mount Lyell shrew	CSC	Found primarily in wetland communities, near streams, in grassy areas, under willows, and in sagebrush steppe communities. Requires moist soil and uses logs, stumps, and other surface objects for cover.	1,5
Antrozous pallidus Pallid bat	CSC	Common species of low elevations in California. Occupies grasslands, desert, shrublands, woodlands, and forests from sea level up through mixed conifer forests. This species is quite versatile in its choice of roosting sites, and has been documented using tree hollows, rock crevices, caves, abandoned mines, and structures.	1-8
Corynorhinus townsendii Townsend's big-eared bat	CSC	Found in all habitat types from low to moderate elevations. Not found in high elevation subalpine and alpine habitats. Requires caves, mines, or buildings for roosting. Prefers mesic habitats where it gleans from brush or trees along habitat edges.	2,3,4,7,8
Euderma maculatum Spotted bat	CSC	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. In montane habitats, the spotted bat forages over meadows, along forest edges, or in open coniferous woodland. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.	1,2,5,7
Lasiurus blossevillii Western red bat	CSC	Typically found in trees, hedgerows, and forest edges. Roosts in foliage in summer.	1-8
Eumops perotis Western mastiff bat	CSC	Found in a variety of habitats, from desert scrub and chaparral to montane coniferous forest. Typically found in rocky cliff and canyon areas. Its presence is determined by the availability of significant rock features offering suitable roosting habitat.	1,2,5,7

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Federal/State/ CNPS	General Habitat	Potential to Occur in Project Area Segment
Mammals (cont.)			
Lepus americanus tahoensis Sierra Nevada snowshoe hare	CSC	Boreal riparian areas in the Sierra Nevada. Thickets of deciduous trees in riparian areas and thickets of young conifers.	1,5
Lepus townsendii townsendii Western white-tailed jackrabbit	CSC	Inhabits a variety of habitats, including sagebrush, perennial grasslands, alpine dwarf-shrub, early successional conifer habitats, and wet meadows to timberline and above.	1,5
Aplodontia rufa californica Sierra Nevada mountain beaver	CSC	Dense growth of small deciduous trees and shrubs, wet soil, and abundance of forbs in the Sierra Nevada and east slope. Needs dense understory for food and cover. Burrows into soft soil. Needs abundant supply of water.	1,5
Vulpes vulpes necator Sierra Nevada red fox	CT	Occupied habitats are typical of the high Sierra Nevada: high elevation barren, conifer and shrub habitats, montane meadows, talus slopes, subalpine woodlands, and fell-fields. Found mostly above 7,000 feet and rarely below elevations of 5,000 feet.	1,5
Gulo gulo California wolverine	FC/CT/CSC	Habitats used in the southern Sierra Nevada include red fir, mixed conifer, lodgepole, subalpine conifer, alpine dwarf-shrub, barren, wet meadows, montane chaparral, and Jeffrey pine, from 6,400 to 10,800 feet. Uses caves, hollows in cliffs, logs, rock outcrops, and burrows for cover and denning.	1,5
Martes pennanti pacifica Pacific fisher	FC/CSC	Dens and bears young in the cavities of large trees or snags and strongly associated with mid-elevation mature and late successional coniferous or mixed forests. Generally found in stands with high canopy closure, large trees and snags, large woody debris, large hardwoods, and multiple canopy layers.	1,2,5,7
Taxidea taxus American badger	CSC	Drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	7
Ovis canadensis sierrae Sierra Nevada bighorn sheep	FE/CE/CFP	Occurs primarily along the Sierra Crest in the northeast portion of the park. Most of the herd inhabits Forest Service land adjacent to the park.	5

STATUS:
FE – Federal Endangered
FT – Federal Threatened
FC – Federal Candidate
FD – Federal Delisted
CE – California Endangered
CT – California Threatened
CCE – California Candidate Endangered
CFP – California Fully Protected Species
CSC – California Species of Concern

*Believed to be extirpated from the Merced River Corridor

SOURCE: *Special Status Wildlife Species Report for the Merced River Corridor in Yosemite National Park* (NPS 2011a)

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Park/CNPS/ State	General Habitat	Potential to Occur in Project Area Segment
Plants and Fungi			
Antirrhinum leptaleum Spurred snapdragon	SSP	Small washes, shallow ditches, disturbed areas, in foothill woodland, yellow pine forest; historic collection from Wawona; elevations between 300-2100 meters.	7
Asarum lemmonii Lemmon's wild ginger	SSP	Shady wet places along creeks, north-facing river banks; Yosemite Valley, Wawona; elevations between 1100-1900 meters.	2,7
Bolandra californica California bolandra	SSP/4.3	Lower and upper montane coniferous forest, mesic, rocky shaded places; Lyell Fork Merced River; elevations between 2000-3000 meters.	1
Bulbostylis capillaris Threadleaf beakseed	SSP/4.2	Meadows and seeps, meadow habitats, vernally moist gravel pans; Yosemite Valley; elevations between 1000-2000 meters.	2
Camissonia sierrae ssp. *alticola* Mono Hot Spring evening primrose	SSP/1B.2	On vernally moist gravel and sand pans; Merced Lake; elevations between 2000 - 2350 meters.	1
Camissonia sierrae ssp. sierrae Sierra suncup	SSP/4.3	Granite gravel seepage areas; Yosemite Valley; elevations between 500-1300 meters.	2
Carex buxbaumii Buxbaum's sedge	SSP/4.2	Montane and subalpine fens; Coastal Prairie, Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Subalpine Forest, Meadows and seeps, wet conditions in meadow habitats. Yosemite Valley; elevations between 1200-3300 meters.	2
Carex canescens Silvery sedge	SSP	Lake margins, drainages in wet meadows; historic collection from Clark's Wawona; elevations between 1000-3200 meters.	7
Carex fissuricola Cleft sedge	SSP	Meadow slopes and flats, among rocks, wet areas, spray zones; Nevada Falls; elevations between 1500-3500 meters.	1
Carex sartwelliana Yosemite sedge	SSP	Moist forest openings and meadow borders; Wildcat Creek; elevations between 1200-2600 meters.	1,2,5,7
Carex tompkinsii Thompkins' sedge	SSP/4.3/ Rare	Canyon slopes and river bottomlands under conifer-oak woodland canopy; El Portal area; elevations between 1200-1800 meters.	4
Cinna bolanderi Bolander's woodreed	SSP/1B.2	Montane stringer meadows and fens; Wawona & Little Yosemite Valley; elevations between 1670-2440 meters.	1,7
Collinsia linearis Narrow leaf collinsia	SSP	Rocky, metamorphic substrates of broad-leaved upland forest, chaparral, cismontane woodland; El Portal & Wawona; elevations between 200-2000 meters.	4,7

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Park/CNPS/ State	General Habitat	Potential to Occur in Project Area Segment
Plants and Fungi (cont.)			
Cordylanthus rigidus ssp. *brevibracteatus* Short-bracted bird's beak	SSP/4.3	North side Yosemite Valley, dry sandy roadside full sun, 1 mi E Cascade Creek; elevations between 1100-2500 meters.	2
Cypripedium montanum Mountain lady's slipper	SSP/4.2	Deep humus and shade of canyon bottoms; Wawona & below Yosemite Valley; elevations between 200-2200 meters.	3,7
Epipactis gigantea Stream orchid	SSP	Moist conditions in meadows, streambank habitats & cliff basins; Yosemite Valley; elevations between 1500-2600 meters.	2
Eriophyllum congdonii Congdon's woolly sunflower	SSP/1B.2/Rare	Sunny rockys slopes on metamorphic talus; next to river in El Portal; elevations between 500-1900 meters.	4
Erythronium purpurascens Purple fawnlily	SSP	Open forests, meadows, rocky places; Yosemite Valley - possibly extinct; elevations between 1500-2700 meters.	2
Glyceria borealis Northern mannagrass	SSP	Marshes and shallow lake borders; Yosemite Valley; elevations between 800-1250 meters.	2
Helianthus californicus California sunflower	SSP	Meadows, seeps, streambanks, seasonally inundated areas; Wawona; elevations between 1600-2000 meters.	7
Hippuris vulgaris Common mare's tail	SSP	Lakes, ponds, springs, rivers. Little Yosemite Valley; elevations between 0-2600 meters.	1
Hulsea heterochroma Redray alpinegold	SSP	Chaparral, openings in yellow pine forest, Yosemite Valley, 5 miles above Nevada Fall; elevations between 300-2500 meters.	1,2
Isoetes occidentalis Western quillwort	SSP	Mountain lakes and rivers; In Merced River Little Yosemite Valley; elevations between 1500-2500 meters.	1
Leucothoe davisiae Sierra laurel	SSP	Moist, shaded drainage bottoms along creeks and rivers; Yosemite Valley; elevations between 1300-2600 meters.	2
Lewisia congdonii Congdon's lewisia	SSP/1B.3/Rare	Lower montane coniferous forest, metamorphic cliffs; El Portal; elevations between 500-2800 meters.	3,4
Lindernia dubia var. *anagallidea* False pimpernel	SSP	Exposed margins of lakes and ponds, mudflats; Yosemite Valley; elevations between 500-1600 meters.	2
Lithocarpus densiflorus var. *echinoides* *Tanoak*	SSP	Dry shady forest conditions in slope habitats; Merced River below Yosemite Valley; elevations between 600-2000 meters.	2,3
Lycopus uniflorus Northern bugleweed	SSP/4.3	Moist areas, marshes, near springs; Merced River banks from El Portal up; elevations between 1600-2000 meters.	3,4

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Park/CNPS/ State	General Habitat	Potential to Occur in Project Area Segment
Plants and Fungi (cont.)			
Mimulus bicolor Yellow and white monkeyflower	SSP	Occurs under vernally moist conditions; usually in non-wetlands, but occasionally found on wetlands & river bottomlands; Wawona; elevations between 360-2100 meters.	7
Mimulus inconspicuus Small flowered monkeyflower	SSP/4.3	Chaparral, cismontane woodland, lower montane coniferous forest, mesic, shady areas; mouth of Moss Creek; elevations between 160-2000 meters.	2,3,7,8
Mimulus laciniatus Cutleaf monkeyflower	SSP/4.3	Chaparral, lower and upper montane coniferous forest, mesic areas of granitic substrate, vernally moist seepage areas; Yosemite Valley; elevations between 900-2000 meters.	2
Mimulus pulchellus Yellowlip pansy monkeyflower	SSP/1B.2	Lower montane coniferous forest, vernally mesic meadows; Yosemite Valley; elevations between 600-2000 meters.	2
Myrica hartwegii Sierra sweet bay	SSP	Stream and riverbanks; Along Merced below Wawona; elevations between 300-1500 meters.	7,8
Narthecium californicum California bog asphodel	SSP	Fens, seeps; occurs under wet conditions by streams and waterfalls; Bridalveil Falls; elevations between 700-2600 meters.	2
Penstemon azureus ssp. angustissimus Azure penstemon	SSP	Chaparral, Yellow Pine Forest, Sagebrush Scrub, Foothill Woodland; occurs under dry conditions in slope habitats. Yosemite Valley; elevations between 300-700 meters.	2
Penstemon heterophyllus var. *purdyi* Purdy's foothill penstemon	SSP	Chaparral, Foothill Woodland, Yellow Pine Forest; occurs under dry conditions in slope habitats. Yosemite Valley; elevations between 50-1600 meters.	2
Phacelia tanacetifolia Tansy leafed phacelia	SSP	Habitat variable, occurs in slope habitats; Bridalveil Falls, Yosemite Valley; elevations between 1000-2000 meters.	2
Pinus albicaulis Whitebark pine	FC	Cold, windy high elevation sites between 3,000 meeters-3,750 meters	1,2,5
Piperia colemanii Coleman's piperia	G3/4.3	Chaparral, lower montane coniferous forest. Little Yosemite Valley; elevations between 1200-2300 meters.	1
Plagiobothrys torreyi var. *torreyi* Torrey's popcornflower	SSP/1B.2	Moist meadows and flats, forest edges; Yosemite Valley; elevations between 1200-3400 meters.	2
Potamogeton epihydrus ssp. *nuttallii* Nuttall's pondweed	SSP/2.2	Freshwater marshes, tanks; Yosemite Valley; elevations between 400-1900 meters.	2
Quercus lobata Valley oak	SSP	Deep soil on slopes and in valleys. Known from a few majestic specimens in El Portal; elevation 720 meters.	4

TABLE N-3: PRESENTS A SUMMARY OF SPECIAL-STATUS WILDLIFE AND PLANT SPECIES ADDRESSED IN THIS ANALYSIS (CONTINUED)

Scientific Name Common Name	Listing Status: Park/CNPS/ State	General Habitat	Potential to Occur in Project Area Segment
Plants and Fungi (cont.)			
Saxifraga mertensiana Wood saxifrage	SSP	Mossy rocks, cliffs; Yosemite Valley; elevations between 1000-2500 meters.	2
Saxifraga oregana Oregon saxifrage	SSP	Meadows and seeps; occurs under wet conditions in meadow habitats; Yosemite Valley & Little Yosemite Valley; elevations between 150-2500 meters.	1,2
Scutellaria bolanderi ssp. *bolanderi* Sierra skullcap	SSP	Gravelly soils, stream & riverbanks, meadows in oak or pine woodland; Wawona; elevations between 300-2000 meters.	7
Senecio clarkianus Clark's ragwort	SSP	Damp montane meadows; Wawona; elevations between 1400-2700 meters.	7
Sparganium natans Small bur reed	SSP/4.3	Freshwater wetlands, in lake margin and edge habitats, tanks in meadows; tributaries of Merced River; elevations between 2000-2500 meters.	2,7
Staphylea bolanderi Sierra bladdernut	SSP	Chaparral, Foothill Woodland, Yellow Pine Forest; occurs in shaded canyon habitats; Merced River Canyon in El Portal; elevations between 240-1720 meters.	3,4
Trillium angustipetalum Narrowpetal wakerobin	SSP	Shaded bottomlands; Wawona, Yosemite Valley; elevations between 100-2000 meters.	2,7
Vaccinium parvifolium California red huckleberry	SSP	Moist, shaded drainage bottoms along creeks and rivers; Merced River Wawona area; elevations between 1400-2500 meters.	7
Wyethia elata Hall's mule ears	SSP/4.3	Open woodland, forest; Wawona; elevations between 1000-1400 meters.	7

STATUS:

FC – Federal Candidate
Rare: Designated as rare by the State of California
SSP: Park Designated Special Status Species

CNPS RANKINGS:

List 1A: Plants presumed extinct in California
List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
List 3: Need more information
List 4: Plants of Limited Distribution
Threat Ranks:
.1: Seriously endangered in California
.2: Fairly endangered in California
.3: Not very endangered in California

SOURCE: Special Status Plant Species in the Merced River Corridor within Yosemite National Park (NPS 2011b)

Federal Endangered Species

Mammals

Sierra Nevada bighorn sheep
Ovis canadensis sierrae

Status. Federal Endangered, California Endangered, California Fully Protected

General Distribution. Sierra Nevada bighorn sheep use habitats ranging from the highest elevations along the crest of the Sierra Nevada (4,000 meters [13,120 feet]) to winter ranges at the eastern base of the range as low as 1,450 meters (4,760 feet) (USFWS 2007). The Sierra Nevada bighorn sheep population has increased from a low of 100 individuals in 1995 to more than 400 animals since the species was listed as endangered under the federal ESA in 1999. The Yosemite Recovery Unit consists of approximately 40 individuals at high elevations along the northeastern section of Yosemite.

Habitat Requirements. Habitats used by Sierra Nevada bighorn sheep include alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian (DeForge 1980, Monson and Sumner 1980, Wehausen 1980). Bighorn sheep use rocky, steep terrain for escape and bedding and remain near rugged terrain while feeding in open habitat (Zeiner et al. 1990). Low-elevation winter ranges provide this species an important source of high quality forage early in the growing season (USFWS 2007). They use steep, rugged slopes and canyons for lambing areas (Wehausen 1980).

Status in Merced River Corridor. Historically, bighorn sheep occupied alpine and subalpine areas along the Sierra Crest and in the Cathedral Range. It is generally believed that they seasonally migrated from the crest to winter on the eastern escarpment. Given that they occupied the Cathedral Range, it is very likely that bighorn sheep historically occupied the upper reaches of the Merced River drainage. A Museum of Vertebrate Zoology specimen was taken from the east lobe of Lyell Glacier within 1 kilometer (0.62 mile) of the Merced River corridor in October 1933. Another specimen was taken within 3 kilometers of the river corridor east of Crescent Lake near Wawona in 1921 (Museum of Vertebrate Zoology Database 2011). In 1976, a bighorn sheep was sighted near Donohue Pass, approximately 3.5 kilometers northeast of the Merced River corridor (Yosemite Wildlife Observation Database 2011). Although rams might occasionally (rarely) wander into the upper (along the crest) Merced River drainage, it is highly unlikely that bighorn sheep currently occupy the Merced River drainage (Chow, pers. comm.). In addition, bighorn sheep critical habitat (designated in 2008 by USFWS) does not occur within the Merced River corridor.

Federal Threatened Species

Invertebrates

Valley elderberry longhorn beetle
Desmoscerus californicus dimorphus

Status. Federally threatened

General Distribution. The valley elderberry longhorn beetle is found in areas below 915 meters (3,000 feet) in elevations that support species of elderberry (*Sambucus* sp.). At the time of listing in 1980, the beetle was known from fewer than 10 locations on the American River, Putah Creek, and Merced River. Current distribution ranges from southern Shasta County to Fresno County.

Habitat Requirements. The valley elderberry longhorn beetle is an invertebrate species that is completely dependent on its host plant, elderberry, throughout its one-year to two-year life cycle. The beetle spends most of its life in the larval stage, living in the stems of elderberry shrubs. Adults emerge from late March through June, when feeding and mating occurs, about the same time the elderberry flowers. The adult stage is short-lived; females lay their eggs on the bark, larvae hatch and burrow into the stems, and the cycle is repeated. Although elderberry shrubs are relatively common in riparian habitat, it appears that to serve as suitable habitat, shrubs must have stems that are 1 inch or greater in diameter at ground level (Barr 1991). Use of elderberry by the beetle is rarely apparent. Frequently, the only exterior evidence of the use by the beetle is a distinct exit hole created by the larva just before the pupal stage.

Status in Merced River Corridor. The El Portal Administrative Site is the only area in Yosemite National Park that lies below 915 meters (3,000 feet) in elevation. In El Portal, elderberry plants represent a subdominant species within live oak forests, interior live oak forests, interior live oak woodlands, blue oak woodlands, canyon live oak forests, mixed north slope forests, foothill pine/live oak/chaparral woodlands, northern mixed chaparral, interior live oak chaparral, and westside ponderosa pine forests. Elderberry shrubs are scattered throughout the El Portal Administrative Site.

Federal Candidate Species

Amphibians

Yosemite toad
Bufo canorus

Status. Federal candidate, California species of special concern

General Distribution. The historic range of Yosemite toads in the Sierra Nevada occurs from the Blue Lakes region north of Ebbetts Pass (Alpine County) to 5 kilometers (3.1 miles) south of Kaiser Pass in the Evolution Lake/Darwin Canyon area (Fresno County) (Jennings and Hayes 1994). Historically, the

toad ranged from 1,460 meters to 3,630 meters (4,790 feet to 11,910 feet) in elevation (Stebbins 1985) throughout its range and from 1,950 meters to 3,444 meters (6,400 feet to 11,300 feet) in elevation in Yosemite (Karlstrom 1962). The toad is currently known from 179 sites in Yosemite between the elevations of 2,134 meters to 3,505 meters (7,000 feet to 11,500 feet) (Knapp 2003). Estimates suggest that the toad has disappeared from between 47% and 79% of the sites that it previously occupied (Jennings and Hayes 1994, Drost and Fellers 1996). Remaining populations appear more scattered across the landscape and consist of a small number of breeding adults (Kagarise Sherman and Morton 1993).

The NPS surveyed 446 meadows for Yosemite toads during the summer of 2010, 166 of which had been surveyed at least once between 1992 and 2009. The remaining 280 meadows had never been surveyed. The surveys documented 44 new breeding populations of toads, and increased the number of documented breeding populations from 135 to 179. Toads were not found in approximately 50% of the sites where toads had been previously documented, while 9% of meadows where toads had not been documented previously had breeding during the 2010 survey.

Habitat Requirements. The Yosemite toad has been recorded in a broad range of high montane, subalpine, and alpine habitats, including wet meadows, lakes, ponds, and shallow spring channels. The Yosemite toad is most commonly found, however, in shallow, warm water areas, including standing and flowing water in wet meadows, small permanent and ephemeral ponds, and flooded shallow grassy areas and meadows adjacent to lakes (Karlstrom 1962). Wet meadow habitat is the focal habitat for this species.

Status in the Merced River Corridor. Yosemite toad observations have been recorded on 2,142 occasions in Yosemite. Of these observations, 11 records are from the Merced River corridor. There are no records of Yosemite toads within the Merced River corridor prior to 1999, which is likely due to a lack of survey efforts targeting the toad. Between 1999 and 2010, there were a multiple sightings at higher elevation sites around Triple Divide, Isberg, and Rodgers peaks.

Sierra Nevada yellow-legged frog
Rana sierrae

Status. Federal candidate, California candidate

General Distribution. Sierra Nevada yellow-legged frogs currently range from north of the Feather River in northern Plumas County, California, south, including all of Yosemite, to the divide between the South and Middle Forks of the Kings Rivers in Kings Canyon National Park. The majority of their range is in federally designated wilderness. Despite the fact that most of their habitat is fully protected, the Sierra Nevada yellow-legged frog has disappeared from >93% of their historic range. The declines have escalated since the late1970s, and most of the remaining populations are much smaller than those that would have occurred historically (Knapp 2005). Consequently, the Sierra Nevada yellow-legged frog has gone from being one of the most abundant species in the Sierra Nevada (Grinnell and Storer 1924) to one that is considered critically endangered. This species is currently known to occur at approximately 166 sites in Yosemite at elevations ranging from 1,676 meters to 3,536 meters (5,500 feet

to 11,600 feet). The Sierra Nevada yellow-legged frog is a candidate species for listing under the federal ESA, and the USFWS plans to initiate a proposed rule to list this species in 2013. A listing decision would occur within 12 months of proposed ruling.

Habitat Requirements. The Sierra Nevada yellow-legged frog occupies aquatic habitats for almost all of their seasonal life history; they breed, tadpoles develop, and they overwinter in lakes and ponds or low-flowing streams and use flowing water to move between sites. This species is rarely found more than a few feet from water. Because it overwinters in water and has a multi-year tadpole phase, it requires waters that are deep enough that they don't freeze solid in the winter and they don't dry out during the summer.

Status in the Merced River Corridor. Sierra Nevada yellow-legged frog observations have been recorded on 4,581 occasions in Yosemite. Of these observations, 20 records are from the Merced River corridor. Most of the sites where Sierra Nevada yellow-legged frogs are known to exist fall outside of the Merced River corridor. Concerted efforts to survey amphibians in the park have been conducted between 1992 and 2010. Before 1992, there were five records of Sierra Nevada yellow-legged frogs within the river corridor at Wawona (1922), Yosemite Valley (1922, 1958), Triple Peak (1940), and Horsethief Canyon (1991). One of the historic records from Yosemite Valley may have been from farther up Tamarack Creek rather than from the Valley. During a comprehensive survey of all mapped and unmapped lakes and ponds in Yosemite conducted in 2000–2002, Knapp (2005) observed Sierra Nevada yellow-legged frogs at 13 sites around Red and Rodgers peaks. A total of 30 adults or subadults and about 1400 tadpoles were recorded at these sites. Between 1992 and 2010, there were two additional observations in the upper reaches of the Merced River.

Mammals

California Wolverine
Gulo gulo luteus

Status. Federal candidate, California threatened

General Distribution. The California wolverine is an uncommon resident of north Coast Range mountains and the Sierra Nevada. Sightings range from Del Norte and Trinity counties east through Siskiyou and Shasta counties, and south through Tulare County (Zeiner et al. 1990). Wolverines have not been scientifically confirmed in California since the 1920s, but a remote camera sighting detected an individual wolverine in Tahoe National Forest in March 2008.

Habitat Requirements. Habitats used by the California wolverine in the southern Sierra Nevada include red fir, mixed conifer, lodgepole, subalpine conifer, alpine dwarf-shrub, barren, wet meadows, montane chaparral, and Jeffrey pine, while their elevation range in the southern Sierra Nevada is 2,000 meters to 3,400 meters (6,400 feet to 10,800 feet) (Zeiner et al. 1990). The wolverine uses caves, hollows in cliffs, logs, rock outcrops, and burrows for cover and denning, generally in denser forest stages (Zeiner et al. 1990). The wolverine may dig dens in the snow. Wolverines are hunters and scavengers and feed primarily on small mammals and carrion but might kill large snowbound prey (Grinnell et al. 1937, Ingles 1965). Wolverines have extremely large home ranges; in Montana, their

yearly home range was 422 km^2 (156 mi^2) for males and 388 km^2 (144 mi^2) for females (Hornocker and Hash 1981).

Status in Merced River Corridor. Two California wolverine specimens were collected at the head of Lyell Canyon in 1915, just 2 kilometers from the Merced River corridor (Museum of Vertebrate Zoology Database 2011). There have been three unconfirmed sightings within the corridor; along the south fork of the Merced River in 1959, near Pohono Bridge in 1990, and near the junction of Iron Creek and the Merced River in 1959 (Yosemite Wildlife Observation Database 2011). The likelihood of these latter three sightings being legitimate is highly unlikely, however.

Pacific fisher
Martes pennanti pacifica

Status. Federal candidate, California species of special concern

General Distribution. Although the historic distribution of Pacific fisher was once contiguous across California and the Pacific Northwest, including the northern Coast range, Klamath Mountains, southern Cascades, and western slope of the Sierra Nevada, the fisher has declined during the past century. Remaining populations are geographically and, in some cases, genetically isolated from one another (Grinnell et al.1937, Zielinski et al. 1995). Pacific fisher currently occur in only two regions of the state, which are separated by over 430 kilometers: the northwest, including the northern Coast Range and Klamath Province; and the southern Sierra Nevada, including Yosemite National Park (Zielinski et al. 1995). Yosemite lies at the northern tip of the fisher's southern range. The fisher's elevation range is approximately 1,219 meters to 2,134 meters (4,000 feet to 7,000 feet).

Habitat Requirements. The Pacific fisher is one of the most habitat-specific mammals in North America (Buskirk and Powell 1994). Fishers den and bear young in the cavities of large trees or snags and are strongly associated with mid-elevation, mature and late successional coniferous or mixed forests (Powell and Zielinski 1994, Zielinski et al. 2004a, 2004b). In particular, fisher are generally found in stands with high canopy closure, large trees and snags, large wood, large hardwoods, and multiple canopy layers. Fisher generally avoid entering open areas that have no overstory or shrub cover (Buskirk and Powell 1994), while Chow (2009) found that fisher in Yosemite prefer habitat near permanent streams. The fisher has a varied diet consisting primarily of small mammals, such as squirrels, but they also consume porcupines, birds, invertebrates, vegetation, and fruit (Powell and Zielinski 1994).

Status in Merced River Corridor. Fisher are elusive and more challenging to detect compared with other carnivores, but recent fisher surveys (2009–2011) conducted in collaboration with U.C. Berkeley have confirmed the presence of 5– 8 individual fisher south of the Merced River near Chinquapin, Wawona, Mariposa Grove, and along the South Fork Merced River. Previous fisher surveys in the park conducted by Chow (2009) during 1992–1994 detected relatively few fisher despite the availability of suitable habitat and use of a combination of survey methods, including remote cameras and track plates. Chow (2009) concluded that Pacific fisher inhabit Yosemite at very low population densities. The Merced River may be one of multiple barriers currently preventing northward expansion of their

range. Two fisher specimens were collected within the Merced River corridor in Yosemite Valley in 1919 and 1920 (Museum of Vertebrate Zoology Database 2011).

Plants

Whitebark pine
Pinus albicaulis

General Ecology and Distribution. Whitebark pine, a tree from the pine family, is native to California. It occurs in subalpine and upper montane forests at elevations ranging between 2,300 and 4,000 meters. It is considered a keystone species and a major food source for many species of birds and mammals. Whitebark pine is rapidly declining throughout most of its range, primarily due to a combination of white pine blister rust, periodic mountain pine beetle outbreaks, fire suppression, and climate change (Natural Resources Defense Council [NRDC], 2008 and Fryer, 2002).

Habitat and Status in the Project Area. This species occurs on cold and windy, high-elevation sites in isolated stands in the subalpine zone. However, it also co-occurs with a diversity of confiers that vary by location and elevation (NRDC, 2008 and Fryer, 2002). In the Project Area, it is found in Segments 1, 2, and 5 (Merced River above Nevada Fall, Yosemite Valley, and South Fork above Wawona, respectively).

California State Endangered Species

Sierra Nevada bighorn sheep (see Federal Endangered Species section)

Birds

Willow flycatcher
Empidonax trailii

Status. California endangered

General Distribution. The willow flycatcher is a neotropical migrant that breeds in riparian and moist meadow willow thickets in the United States and southern Canada (American Ornithologists' Union 1983). The willow flycatcher winters from Mexico to northern South America. Currently, about half of the willow flycatcher breeding population in California occurs in the Sierra Nevada (Zeiner et al. 1990, Kus et al. 2000). Most willow flycatchers in the Sierra Nevada are found at elevations from 366 meters to 2,900 meters (1,200 feet to 9,500 feet), although most of the known willow flycatcher sites (88%) occur at elevations between 1,200 meters and 2,400 meters (3,900 feet to 7,900 feet) (Serena 1982, Harris et al. 1988, Stafford and Valentine 1985). Willow flycatchers are a rare former breeder in Yosemite.

Habitat Requirements. As their name suggests, willow flycatchers frequent the willows found along languid streams and, to a lesser degree, within moist meadows (Gaines 1992). Deciduous trees and shrubs interspersed with open areas enhance the quality of foraging habitat. Willow flycatchers forage by either gleaning insects from vegetation while flying, or by waiting on an exposed perch and capturing insects in flight (Ettinger and King 1980, Sanders and Flett 1989).

Status in Merced River Corridor. Once a commonly observed bird in Yosemite Valley, willow flycatchers are now exceedingly rare in the park as a whole. Willow flycatcher observations have been recorded on 50 occasions in Yosemite. Of these observations, 26 records are from the Merced River corridor. The first documented observation of a willow flycatcher in Yosemite was made by the Grinnell survey in 1915. Almost all of the river corridor's willow flycatcher observations fall between 1915 and 1931 (Yosemite Wildlife Observation Database 2011). Gaines (1992) indicates that they had stopped breeding in the Valley by 1966. Two observations from the 1970s (Yosemite Valley 1974, Wawona 1977) are the most recent sightings of willow flycatchers in the river corridor, although they are still seen on rare occasions elsewhere in the park. A recent study found that willow flycatchers no longer breed in Yosemite National Park (Siegel et al. 2008).

Bald eagle
Haliaeetus leucocephalus

Status. California State endangered, California fully protected

General Distribution. Bald eagles are found throughout North America, and there are breeding populations in almost all U.S. states and Canadian provinces. Once far more numerous than they are today, bald eagle populations suffered tremendously during the 20th century due to state-enacted bounties (Robards and King 1966) and poisoning from pesticides like DDT (Buehler 2000). Stricter protection measures and a reduced exposure to environmental toxins has led to the large-scale recovery of bald eagles, a feat widely regarded as one of the most successful modern conservation efforts. Bald eagles are uncommon but occasional breeders in Yosemite.

Habitat Requirements. Bald eagles favor lakes and rivers with abundant prey (mostly fish) and large trees in which to nest. The relative paucity of bald eagle observations in Yosemite indicates that there may be insufficient fish in Yosemite rivers to support a robust eagle population. Bald eagles also compete directly with ospreys, occasionally stealing food from them. Bald eagles are regularly observed in Sierra foothill reservoirs and at lakes east of Tioga Pass; in both locations the eagles are feeding on stocked fish populations that are higher in elevation than what would naturally be present.

Status in Merced River Corridor. Bald eagle observations have been recorded on 123 occasions in Yosemite. Of those observations, 25 records are from the Merced River corridor (Yosemite Wildlife Observation Database 2011). Roughly half of the bald eagle observations in the river corridor are from areas downstream of Yosemite Valley. The first records of bald eagles in Yosemite are from Wawona (November 1957). From the late 1970s to 1992, bald eagles were documented in the river corridor at a rate of one every few years.

California State Threatened Species

California wolverine (see Federal Candidate Species section)

Mammals

Sierra Nevada red fox
Vulpes vulpes necator

Status. California threatened

General Distribution. The Sierra Nevada red fox is one of 10 currently recognized red fox subspecies in North America (Hall 1981). *Vulpes vulpes necator* is one of three subspecies of mountain red fox, along with the foxes of the Cascade Mountains (*V. v. cascadensis*) and the Rocky Mountains (*V. v. macroura*) (Perrine et al. 2010). The Sierra Nevada red fox has historically been found throughout high elevations of the Sierra Nevada from Tulare County northward to Sierra County, and from Mount Shasta and Lassen Peak westward to the Trinity Mountains (Trinity County) (Grinnell et al. 1937). The Sierra Nevada red fox elevation range is approximately 1,200 meters to 3,600 meters (4,000 feet to 11,800 feet); it is seldom observed below 1,500 meters (4,900 feet) and most often is seen above 2,100 meters (6,900 feet) (Grinnell et al. 1937, Perrine et al. 2010). This fox occurs at low densities, even in areas of high relative abundance (Perrine et al. 2010). Current Sierra Nevada red fox distribution and range are uncertain (CDFG 1996); until recently, the Lassen Peak region accounted for the only verified contemporary detections of mountain red fox (Kucera 1993 and 1995, Perrine and Arnold 2001, Perrine 2005). In August 2010, biologists on the Humboldt-Toiyabe National Forest detected a Sierra Nevada red fox at an automatic camera station near Sonora Pass at an elevation of 3,048 meters (10,000 feet) along the border of Tuolumne and Mono counties. Since this detection, three (and possibly five) individual Sierra Nevada red foxes have been detected within 80 miles of this area, with the lowest detection at 1,828 meters (6,000 feet).

Habitat Requirements. The Sierra Nevada red fox occupied habitats are typical of the high Sierra Nevada: high-elevation barren, conifer, and shrub habitats, montane meadows, talus slopes, subalpine woodlands, and fell-fields (Perrine et al. 2010, Grinnell et al. 1937, Ingles 1965). Possible den sites include natural cavities in talus slopes or rockslides, earthen dens, boulder piles, or even the space beneath vacant cabins (Grinnell et al. 1937, Aubry 1983). In the winter, Sierra Nevada red foxes may follow the forested edge of openings, possibly avoiding areas where they would be exposed to attack by other carnivores, while ski tracks and other packed snow may also facilitate travel (Perrine et al. 2010). Red foxes are opportunistic predators and scavengers that eat a wide variety of foods, depending on their seasonal availability, including small and medium-sized mammals, birds, insects, invertebrates, fruit, carrion, and garbage (Perrine et al. 2010).

Status in Merced River Corridor. Until recently, the last verified Sierra Nevada red fox sighting (confirmed by photograph) near Yosemite National Park occurred during the winter of 1990-1991 at the Tioga Pass Resort 2,940 m (9,645 ft) on the Inyo National Forest, just outside the park (Les Chow, NPS Inventory and Monitoring Network, pers. comm.). However, in the last few years there have been

several more detections. In 2009, the CDFG began surveying high-elevation habitats in the southern Cascade and Sierra Nevada ranges for Sierra Nevada red fox with the goal of determining current red fox distribution as well as genetic make-up of existing individuals or populations. Using baited remote, motion-sensing camera stations and passive hair-snaring devices, a total of nine individual Sierra Nevada red foxes have been detected in high elevation wilderness areas in the Sierra (C. Stermer, Pers. Comm.). In April 2012, a Sierra Nevada red fox was detected on the northern border of Yosemite National Park near Dorothy Lake in Toiyabe National Forest. Surveys targeting other carnivores, such as *Martes,* are not adequate for detecting Sierra Nevada red fox (Perrine et al. 2010). Surveys in the park targeting red fox are being proposed; however, based on previous survey and sighting data, it is unlikely that a significant red fox population exists in Yosemite National Park.

California State Fully Protected Species

Birds

Bald eagle (see California State Endangered Species section)

Golden eagle
Aquila chrysaetos

Status. California fully protected

General Distribution. Golden eagles occur across most of North America, ranging from high alpine habitats to low deserts. Nearly all nesting in the United States occurs west of the Great Plains, with the rest of the range used primarily by migrants (Palmer 1988). In California, they inhabit foothills, mountainous areas, sage-juniper flats, and desert habitats (Zeiner et al. 1990). In the Sierra Nevada, golden eagles favor grasslands and areas of shrubs or saplings, and open-canopied woodlands of young blue oaks. In late summer, they often range to above timberline (Zeiner et al. 1990). The golden eagle is a locally uncommon breeder at Yosemite.

Habitat Requirements. Golden eagles feed mostly on rabbits and rodents but may also take other mammals, birds, reptiles, and carrion. They hunt in meadows, clearings, rock outcroppings, granite shelves, fell-fields, talus, and other open or openly wooded habitats, but they avoid dense forests (Gaines 1992). They employ three main strategies to search for prey: soaring, still-hunting from a perch, and low contouring flight (Edwards 1969, Dunstan et al. 1978, Dekker 1985, Palmer 1988).

Status in Merced River Corridor. Golden eagle observations have been recorded on 273 occasions in Yosemite. Of these observations, there are 74 records from the Merced River corridor. These records span the years from 1915–2008. The majority of these observations are from locations in Yosemite Valley. Golden eagles have also been observed near Wawona Dome (1983) and at Washburn Lake (1940), as well as in the Merced Gorge between the Valley and El Portal (Yosemite Wildlife Observation Database 2011). Nevada Fall is a representative nesting location (Gaines 1992).

Peregrine falcon
Falco peregrinus

Status. California fully protected

General Distribution. Peregrine falcons can be found on nearly every ice-free landmass on earth. They will frequently migrate enormous distances; individuals from northern populations might travel 25,000 kilometers (15,530 miles) annually (White et al. 2002). In California, they breed along the coast as well as in most northern mountain ranges, including the Sierra Nevada (Polite and Pratt 1990). Peregrine falcon nests are often scrapes on ledges or cliffs, a habit they practice in the Valley on features like El Capitan and Glacier Point. The use of dichlorodiphenyltrichloroethane (DDT) as a pesticide in the mid-to-late 1900s decimated peregrine falcon populations, and as recently as 1981 there may have been as few as 39 breeding pairs in California (Monk 1981). Intensive management of peregrines falcons, including captive rearing, led to a resurgence of their populations in the last three decades. The peregrine falcon is a rare but regular breeder in Yosemite.

Habitat Requirements. Peregrine falcons will hunt in a wide variety of habitats, including meadows, woodlands, marshes, and mudflats, but typically nest on cliff ledges with expansive views (Gaines 1992). Peregrine falcons feed almost exclusively on birds, which are taken in flight. They require cliffs and ledges for cover and usually breed and hunt near water (Polite and Pratt 1990).

Status in Merced River Corridor. Peregrine falcon observations have been recorded on 118 occasions in Yosemite. Of those observations, 65 records are from the Merced River corridor (Yosemite Wildlife Observation Database 2011). The first documented peregrine sighting in Yosemite Valley was in 1940. Following this record are three observations from the summer of 1949, one of which involved two peregrines. In the 1950s and 1960s, DDT sent peregrine falcon populations plummeting all over the world. In 1972, the use of DDT was essentially banned; and in 1973, the peregrine was one of the first species to be listed under the federal ESA. By the early 1970s, peregrine falcons had all but disappeared in Yosemite. In 1978, rock climbers scaling the face of El Capitan in Yosemite Valley discovered nesting peregrine falcons; the first time in over 35 years that this species had been confirmed as breeding in the park. Since 1978, over 30 years ago, peregrine falcons have continued to recover in the park. Breeding surveys conducted in 2010 revealed eight active nests in Yosemite, the most ever documented in one season. Yosemite has a policy of temporarily closing rock climbing routes between March and August that pass through active peregrine falcon nesting sites.

California State Rare Species

Plants

Thompkins' sedge
Carex tompkinsii

General Ecology and Distribution. This perennial herb in the sedge family is endemic to California and occurs in chaparral, foothill woodland, red fir forest, and yellow pine forest habitats at elevations of 1,200 to 1,800 meters.

Habitat and Status in the Project Area. It is found in canyon slopes and river bottomlands under conifer-oak woodland canopy. This species occurs in the El Portal area (Segment 4).

Congdon's woolly-sunflower
Eriophyllum congdonii

General Ecology and Distribution. This species, a native annual herb in the aster family, is endemic to California and restricted to Mariposa County. It is found on dry, mostly south-facing metamorphic and metasedimentary outcrops in chaparral and oak woodlands. It is endemic to the main stem of the Merced River canyon near El Portal and the South Fork of the Merced River downstream of Wawona.

Habitat and Status in the Project Area. Habitat for this species occurs on sunny rocky slopes next to the river in El Portal (Segment 4).

Congdon's lewisia
Lewisia congdonii

General Ecology and Distribution. This perennial herb in the montia family is endemic to California and occurs in chaparral, foothill woodland, red fir forest, and yellow pine forest. It is only found within Mariposa and Fresno Counties at elevations between 500 and 2,800 meters.

Habitat and Status in the Project Area. This species is known from approximately ten occurrences in the canyons of the Kings and Merced Rivers. In the Project Area, it occurs on metamorphic cliffs within lower montane coniferous forests in El Portal (Segment 3).

California State Species of Special Concern

California wolverine (see Federal Candidate Species section)

Pacific fisher (see Federal Candidate Species section)

Yosemite toad (see Federal Candidate Species section)

Sierra Nevada yellow-legged frog (see Federal Candidate Species section)

Fish

Hardhead
Mylopharodon conocephalus

Status. California species of special concern

General Distribution. Hardhead are endemic to California and native to the Sacramento and San Joaquin River basins and the Russian River watershed. Hardhead are typically found in undisturbed

areas of larger middle- and low-elevation streams and rivers. This species ranges from sea level to 1,450 meters (4,750 feet) in elevation. Historically, hardhead were regarded as a widespread and locally abundant species. Hardhead still appear to be widespread in foothill streams, but their specialized habitat requirements combined with widespread alteration of downstream habitats has resulted in isolated populations making them more susceptible to local extinction (Moyle et al. 1995).

Habitat Requirements. Hardhead are typically found in undisturbed streams with clear, deep pools that have sand-gravel-boulder substrates and slow water velocities (Moyle et al. 1995). This species distribution might be limited to well-oxygenated streams because they are relatively intolerant of low oxygen levels, especially at higher temperatures (Cech et al. 1990). Most streams in which they occur have summer temperatures in excess of 20 °Celsius (C) (68 °Fahrenheit [F]); optimal temperatures for hardhead appear to 24–28 °C (75–82 °F).

Status in the Merced River Corridor. Hardhead observations have been recorded on two occasions in Yosemite, both from the Merced River. It is unlikely that hardheads occurred above El Portal on the Merced River. The Merced River gorge likely prevented them from migrating any farther up the river. The only documented observations of hardheads in the Merced River corridor were in 1987 and 2006 in El Portal (Stillwater Sciences 2008). Electrofishing surveys conducted by CDFG in 2008 at two sites in El Portal did not detect any hardhead.

Amphibians

Foothill yellow-legged frog
Rana boylei

Status. California species of special concern

General Distribution. Historically, foothill yellow-legged frogs occurred from the Santiam River (Marion County), Oregon, in the north to the San Gabriel Mountains (Los Angeles County), California (Hayes and Jennings 1988) in the south. They occupied the western slopes of the Cascade Mountains, the western foothills of the Sierra Nevada and Coast Ranges, and the Tehachapi and San Gabriel Mountains. An isolated population also occurred in the Sierra San Pedro Martir, Baja California, Mexico (Loomis 1965). Today, foothill yellow-legged frogs continue to occur across their historical range in Oregon and California but in greatly reduced numbers (Lannoo 2005). In California, they inhabit elevations from sea level to 1,939 meters (6,360 feet) (Hemphill 1952). The species is believed to have disappeared from 51% of its historic localities throughout its range and is estimated to have disappeared from approximately two-thirds of its historic localities within the Sierra Nevada (Hayes and Jennings 1996).

Habitat Requirements. Foothill yellow-legged frogs are primarily found in streams with riffles, rocky substrates, and open banks (Lannoo 2005). Adults have also been found in deep, isolated pools and vegetated backwaters (Hayes and Jennings 1988). Breeding and rearing habitat is located in gently flowing water where there is a reduced risk to egg masses and tadpoles from high water events and scouring (Kupferberg 1996a).

Status in the Merced River Corridor. There are only four recorded observations of foothill yellow-legged frogs in Yosemite. All four of those sightings were in Yosemite Valley and near Cascade Creek. The first specimen was collected near Cascade Creek in July 1948 (University of Michigan Museum of Zoology). Three additional observations were reported for Yosemite Valley in 1974 (Yosemite Wildlife Observation Database 2011). No individuals have been reported in the park since the mid-1970s, and the species is believed to be extirpated from the park. The low number of historic records is likely a reflection of the limited habitat for foothill yellow-legged frogs in the park.

Birds

Northern goshawk
Accipter gentilis

Status. California species of special concern

General Distribution. Northern goshawks occupy temperate and boreal forests throughout the Holarctic (Brown and Amadon 1968, Squires and Reynolds 1997). They are year-round residents throughout all or most of the California range, although in winter some individuals remain on or near breeding territories while others migrate short distances to winter elsewhere (Keane 1999). Throughout their range, they inhabit moderately dense coniferous forests broken by meadows and other openings, at elevations between 1,500 meters and 2,700 meters (4,920 feet and 8,860 feet). Northern goshawk is an uncommon year-round resident in Yosemite.

Habitat Requirements. Northern goshawks forage in mature and old-growth forests that have relatively dense canopies and open understories (Beier and Drennan 1997) but also hunt among a variety of vegetative cover, including meadow edges (Younk and Bechard 1994). Goshawks hunt from tree perches, scanning the ground and lower canopy for prey. As such, an open understory improves the chances of detection and capture of prey (Reynolds et al. 1992).

Status in Merced River Corridor. Northern goshawk observations have been recorded on 160 occasions in Yosemite. Of these records, 54 observations were in the Merced River corridor, mostly in Yosemite Valley. Besides in the Valley, one bird was seen in flight near Wawona Dome (1982), three were recorded from Little Yosemite Valley (1990, 1994), and two were recorded from Merced Lake (1982, 1990) (Yosemite Wildlife Observation Database 2011). Gaines (1992) indicates Little Yosemite Valley as a "representative nesting locality."

Long-eared owl
Asio otus

Status. California species of special concern

General Distribution. The long-eared owl inhabits open and sparsely forested habitats across North America and Eurasia between 30° and 65°North latitude (Marks et al. 1994). Long-eared owls are found across most of the United States but are uncommon throughout their range. In the Sierra

Nevada, this species is found from blue oak savannah up to ponderosa pine and black oak habitats, usually in association with riparian habitats. In Yosemite, they are known to nest in riparian forests and oak-conifer woodlands (Gaines 1992). Long-eared owls will also use live oak thickets and other dense stands of trees for roosting and nesting (Zeiner et al. 1990). Long-eared owl is a rare summer resident and breeder at Yosemite.

Habitat Requirements. Long-eared owls nest in riparian, oak-conifer, and eastside pine and juniper forests in the Sierra Nevada, and are associated with edges between forests and grasslands or shrublands (Gaines 1992, Marks et al. 1994, Hunting 2008). These owls might be more numerous than is known; little is known of their population status, habitat requirements, and prey in the park (Gaines 1992).

Status in Merced River Corridor. In Yosemite, little is known about the status of the long-eared owl. During one year of meadow surveys for great gray owls, long-eared owls were detected at 5 out of 15 meadows (Keane et al. 2011); none of these meadows were within the Merced River corridor. The species has been recorded on 22 different occasions in Yosemite, of which only three records are from Yosemite Valley (Yosemite Wildlife Observation Database 2011). Long-eared owls are only known to have nested in the Valley on one occasion, and that bird was shot and collected by the Grinnell/MVZ survey in 1915. Two records are from the same date and general location (Yosemite School and Leidig Meadow, October 1, 1987).

Vaux's swift
Chaetura vauxi

Status. California species of special concern

General Distribution. Vaux's swifts breed from southwestern Canada through the western United States to Mexico, Central America, and northern Venezuela. In winter, northern migrant populations of this species overlap southern residents (Bull and Collins 2007). Vaux's swifts are an uncommon breeder in Yosemite.

Habitat Requirements. Vaux's swifts require older trees and hollow snags for nesting and roosting habitat. To maintain nest and roost trees over time, both live and dead large-diameter hollow trees should be maintained, as well as green trees with some indication of decay to replace those that fall or become unsuitable (Bull and Collins 2007).

Status in Merced River Corridor. Vaux's swift observations have been recorded on 24 different occasions in Yosemite. Of these observations, five records are from the Merced River corridor (Yosemite Wildlife Observation Database 2011). They are a rare summer resident in the Merced River corridor, although Gaines (1992) suspects that Wawona Meadow is a regular nesting site for them. Furthermore, Gaines (1992) suspects that Vaux's swifts are "thinly but widely distributed" through old-growth forests with suitable nesting sites, and that the many documentations of them near meadows may not reflect the true nature of their habitat preferences.

Northern harrier
Circus cyaneus

Status. California species of special concern

General Distribution. The northern harrier is found as a breeding species throughout North America and Eurasia (where it is called the hen harrier). It is a long-distance migrant, and its range extends from northern South America to breeding grounds north of the Arctic Circle (Macwhirter and Bildstein 1996). Throughout its range, the northern harrier favors open areas such as grasslands, meadows, wetlands, and agricultural clearings. Northern harrier is a rarely seen migrant that passes through Yosemite.

Habitat Requirements. Northern harriers nest on the ground and in winter will roost communally on the ground. Their densest populations on the breeding grounds are typically associated with large tracts of undisturbed habitats dominated by thick vegetation growth (Apfelbaum and Seelbach 1983, Toland 1986, Kantrud and Higgins 1992). Northern harriers winter in a variety of open habitats dominated by herbaceous cover, including upland grasslands, open-habitat floodplains, and freshwater marshes (Temeles 1986, Collopy and Bildstein 1987). They typically hunt by flying low over habitats while searching for mammals and small birds (Macwhirter and Bildstein 1996).

Status in Merced River Corridor. Northern harriers observations have been recorded on 47 occasions in Yosemite. Of these observations, 19 records are from the Merced River corridor (Yosemite Wildlife Observation Database 2011). The majority of the records are from meadows in Yosemite Valley during the fall. Three records are from Wawona; two of those observations were in the same location on the same day (Wawona Meadow, August 1, 1977), and one was from 2006. The earliest documentations of northern harriers in the Valley are two records from 1926 and 1928 (Gaines 1992). Following these records is an observation of two birds from 1954. Beginning in 1977, there are records of several northern harriers per decade in the Valley through 2006 (Yosemite Wildlife Observation Database 2011).

Olive-sided flycatcher
Contopus cooperi

Status. California species of special concern

General Distribution. The olive-sided flycatcher breeding range extends from Alaska across Canada south into the United States, where it occupies forested areas. In California, the general outline of its current breeding range is largely unchanged from historic range. However, local extirpations have been reported for a few areas (Marshall 1988, Raphael et al. 1988). The olive-sided flycatcher is well sampled by Breeding Bird Surveys, which show that while the species is still abundant in the state, populations declined steadily from 1968 to 2004 (Sauer et al. 2005). Likewise, migration data from Southeast Farallon Island also show significant declines over a 25-year period (1968–1992) (Pyle et al. 1994). Olive-sided flycatchers are a fairly common summer resident in Yosemite.

Habitat Requirements. Olive-sided flycatchers forage in unobstructed canopies with high perches (Altman and Sallabanks 2000). Grinnell and Miller (1944) described their foraging and singing-post perches as apical tips of snags that protrude above the surrounding canopy. Altman (1999) observed that most foraging took place from the upper third of trees or snags.

Status in Merced River Corridor. Olive-sided flycatcher observations have been recorded on 81 occasions in Yosemite. Of these observations, 15 records are from the Merced River corridor. The first recorded observations of olive-sided flycatchers in Yosemite Valley were in the 1920s. Between 1923 and 1939, there were nine observations of this species in the Valley. Four records are from the 1970s, with one of these being the sole Wawona observation. An observation at Washburn Lake from 1990 is the highest-elevation observation from the Merced River corridor (Yosemite Wildlife Observation Database 2011).

Black swift
Cypseloides niger borealis

Status. California species of special concern

General Distribution. Black swifts are found throughout the western United States and Canada, and as far south as Costa Rica. Despite their large range, black swift populations are poorly understood and probably small; fewer than 100 of their breeding sites have been documented (Lowther and Collins 2002). In California, their populations are focused in the central coast, the central and southern Sierra Nevada, and in the San Bernardino and San Jacinto mountains (Roberson and Collins 2008).

Habitat Requirements. In Yosemite, black swifts only nest near or behind waterfalls, although elsewhere in their range nests are found on sea cliffs or other sheer rock faces (Lowther and Collins 2002). Their primary food source during the breeding season are events of emergent winged ants, which in southern California accounts for as much as 90% of what adults feed a fledgling (Foerster 1987, Marin 1999, Rudalevige et al. 2003).

Status in Merced River Corridor. Black swifts have been observed on 32 occasions in Yosemite National Park. Of these observations, 21 records are from the Merced River corridor. Despite suitable habitat elsewhere in Yosemite, the vast majority of black swift observations in the park are in or near the main stem of the Merced River (Yosemite Wildlife Observation Database 2011). There is only one documented observation of a black swift in the Tuolumne River drainage (Hetch Hetchy Reservoir, 2001). In the 1920s, local naturalists located black swift nests near Yosemite Valley (Gaines 1992), and Grinnell and Miller (1944) indicate the Valley and other locations in Mariposa County as nesting sites. Bridalveil Fall is suspected to be one of only three sites in California where nesting populations of black swifts exceed 10 pairs (Roberson and Collins 2008). Gaines also indicates Nevada Fall as a nesting site.

Yellow warbler
Setophaga petechia

Status. California species of special concern

General Distribution. Breeding range of the yellow warbler extends over most of North America, and wintering range extends to northern South America. In California, yellow warblers breed over much of the state where suitable breeding habitat occurs. Some yellow warblers winter in extreme southern California. Yellow warbler is a locally common summer resident and regular breeder in Yosemite.

Habitat Requirements. Yellow warblers breed primarily in riparian woodlands from coastal, valley, and desert lowlands, up to 2,400 meters in elevation in the Sierra Nevada. Other breeding habitat types includes montane chaparral, ponderosa pine, and mixed conifer where substantial amounts of brush occur (Zeiner et al. 1990). In the Merced River corridor, they generally inhabit areas of willow and cottonwood.

Status in Merced River Corridor. Yellow warbler observations have been recorded on 53 occasions in Yosemite (Yosemite Wildlife Observation Database 2011). Of these observations, 24 records are from the Merced River corridor. The first documented observation of yellow warblers in Yosemite Valley was in 1926 (Gaines 1992). Gaines (1992) characterized the Valley and Little Yosemite Valley as representative nesting localities. In 2010, bird surveys detected 49 individual yellow warblers in Yosemite Valley and confirmed breeding based on two specific observations: (1) an adult carrying food for young and (2) recently fledged young.

Harlequin duck
Histrionicus histrionicus

Status. California species of concern

General Distribution. Harlequin ducks are found on both the western and eastern seaboards of North America. In western North America, their breeding range extends from western Alaska and the northern Yukon south to the Sierra Nevada. From April to September, they migrate inland to breed along turbulent mountain rivers with vegetated banks for cover (Beedy 2008). At the conclusion of the breeding season, they move back to the coast where they forage in intertidal areas. Harlequin duck population decline has been noted across much of their range (Robertson and Goudie 1999). Harlequin duck is a rare breeder in Yosemite.

Habitat Requirements. Yosemite features the clear, fast-flowing river and stream conditions associated with the breeding grounds of harlequin ducks. These conditions include low acidity, steep banks, and substantial streamside vegetation (Beedy 2008). They feed primarily by diving into the water and searching among rocks for aquatic insects, although they will occasionally take fish (Robertson and Goudie 1999).

Status in Merced River Corridor. As of 2011, there are 43 records of harlequin ducks in Yosemite's Wildlife Observation Database. Of these records, 39 observations are from the Merced River corridor. According to Gaines (1992), harlequin ducks were found in every major Yosemite watershed from 1,200 meters in elevation to timberline until the 1920s. After an absence of nearly 20 years, a female harlequin was observed in Wawona in 1940 (Gaines 1992). It wasn't until 1977 that harlequins were again observed in the Merced River, and they were seen with some regularity until 1985. After a 15-year absence, harlequin ducks were documented repeatedly in the Merced River between 2000–2007 (Yosemite Wildlife Observation Database 2011).

Great gray owl
Strix nebulosa

Status. California Endangered

General Distribution. The great gray owl is a large forest owl that ranges across northern boreal and temperate forests in both North America and Eurasia. Throughout its circumpolar range, the species is considered rare. In California, great gray owls are restricted to the Sierra Nevada and southern Cascades. The core breeding distribution is centered on Yosemite and the immediately adjacent and surrounding Stanislaus, Sierra, and Sequoia National Forests (Winter 1986, Rich 2000, Keane et al. 2011). The Sierra Nevada population is the southernmost population in the world, with the closest known breeding population occurring in southern Oregon. An estimated 100 to 200 pairs of great gray owls occur in California, with a limited geographic distribution centered in Yosemite and adjacent National Forest lands in the central Sierra Nevada (Keane et al. 2011). Recent genetic work by Hull et al. (2010a) has revealed that the Yosemite population of great gray owls has been demographically isolated from other *S. nebulosa* populations for an extensive period of time, and the authors recommend designating a separate subspecies *S. n. yosemitensis* for the Sierra Nevada lineage. Genetic diversity also was extremely low for this subspecies, which is typical of recent population bottlenecks and likely attributable to habitat loss and fragmentation (Hull et al. 2010a). Given that *S. n. yosemitensis* is essentially restricted to Yosemite and immediate environs, this park is unequivocally imperative for the conservation of this subspecies (Hull et al. 2010a). The great gray owl is a rare year-round resident and regular breeder in Yosemite.

Habitat Requirements. In the Sierra Nevada, the owls require extensive, densely vegetated wet or moist meadows margined by old-growth coniferous forest from the mixed conifer through the red fir to the lower lodgepole pine zones (Siegel and DeSante 1999) between 750 meters to 2,700 meters elevation (Greene 1995). Great gray owls breed in conifer stands with large snags and high canopy closure in the immediate vicinity of a montane meadow. The vast majority of known nesting sites have been within 250 meters of a meadow, with most averaging 150 meters from the meadow's edge (Maurer 2006, Siegel 2006). In the greater Yosemite area, great gray owls tend to nest in large, broken-topped conifer snags, particularly red fir (*Abies magnifica*) or white fir (*Abies concolor*), and in lower elevations have also been found in black oak (*Quercus kellogi*) (Greene 1995, Keane et al. 2011).

Status in Merced River Corridor. Great gray owl observations have been recorded on 204 occasions in Yosemite. Of these observations, 21 records are from the Merced River corridor. The majority of

these observations were in or around Wawona Meadow, with just five observations in Yosemite Valley (Yosemite Wildlife Observation Database 2011).

California spotted owl
Strix occidentalis occidentalis

Status. California species of concern

General Distribution. The California spotted owl ranges from the southern Cascades south throughout the entire Sierra Nevada and in the central Coast Ranges. Population density in Yosemite is higher than elsewhere in the Sierra Nevada. In Yosemite, owl density was estimated from 0.25 to 0.46 owls per square kilometer (km2) (1,000 square miles [m2]), whereas the mean density in surrounding areas in the Sierra Nevada was estimated from 0.10 to 0.21 km2 (1,000 m2) (Roberts 2008). Although Roberts (2008) did not calculate home ranges, California spotted owl pairs in Yosemite [1 pair per 5.6 km2 (3.48 m2)] exceeded the mean home range estimate throughout California [10.5 km2 (6.52 m2)] (Zabel et al. 1992). Roberts (2008) estimated 315 spotted owl pairs in Yosemite, with 154 pairs in burned mixed-conifer forest and 161 pairs in unburned forest. Spotted owl is an uncommon year-round resident and regular breeder in Yosemite.

Habitat Requirements. The California spotted owl is strongly associated with areas of mature and old forest with thick canopy that contains many dense, old, live, and dead trees and fallen logs (Blakesley et al. 2005, Seamans 2005). Spotted owls prey mainly on small to medium-sized mammals, primarily rodents in the Sierra Nevada. It mostly consumes northern flying squirrels (*Glaucomys sabrinus*) in the higher elevations (conifer forests) and woodrats (*Neotoma* spp.) at lower elevations (burned mixed-conifer, oak woodlands, and riparian forests) and throughout southern California (Verner et al. 1992a, Roberts 2008). Downed woody debris in higher-elevation forests of the Sierra Nevada is strongly associated with underground fungi, which are important food for spotted owl prey species, such as northern flying squirrels (Davis and Gould 2008).

Status in Merced River Corridor. The Sierra Nevada offers the only extensive, nearly continuous habitat for the California spotted owl and is of critical importance for protecting this subspecies (Siegel and DeSante 1999). California spotted owl observations have been recorded on 72 occasions in Yosemite. Of these observations, 14 records are from the Merced River corridor. The first documented observation of a California spotted owl in Yosemite Valley was in 1940. Sightings of California spotted owls are sporadic in the Valley. Yosemite's wildlife observation database only contains one reference to a California spotted owl in Wawona in 1972 and one high-elevation observation at Merced Lake in 2004 (Yosemite Wildlife Observation Database 2011).

Mammals

Pallid bat
Antrozous pallidus

Status. California species of special concern

General Distribution. The pallid bat is found from southern British Columbia and Montana to central Mexico and Cuba, and east to Texas, Oklahoma, and Kansas. Throughout California, the species inhabits primarily low to mid elevations, although it has been found up to 3,400 meters (11,000 feet) in the Sierra Nevada (Barbour and Davis 1969). Habitats range from desert to coniferous forest and nonconiferous woodlands. The pallid bat occurs in Yosemite, but its status is not well known. There are eight museum specimens for pallid bats for Yosemite, all from Yosemite Valley (Museum of Vertebrate Zoology Database 2011) collected between 1934 and 1940 (Pierson et al. 2006).

Habitat Requirements. This species is quite versatile in its choice of roosting sites and has been documented using tree hollows (both oak and ponderosa pine), rock crevices, caves, abandoned mines, and other anthropogenic structures such as buildings and bridges (Barbour and Davis 1969, Hermanson and O'Shea 1983, Lewis 1996, Orr 1954, Pierson et al. 1996, Pierson et al. 2001). This species is gregarious and roosts in nursery colonies of typically between 30 and several hundred individuals. The pallid bat feeds primarily on large, flightless arthropods such as scorpions, Jerusalem crickets, cicadas, wolf spiders, and centipedes (Pierson et al. 2006). Large cerambycid beetles, particularly *Prionus californicus*, and ten-lined June beetles (*Polyphylla decemlineata*) are also major prey items (Orr 1954, Pierson et al. 2004).

Status in Merced River Corridor. The pallid bat has been detected within the Merced River corridor in Yosemite Valley and in Little Yosemite Valley, and recent acoustic surveys by park biologists in 2010 have detected the pallid bat in El Portal, Little Yosemite Valley, and along the South Fork Merced River. In Yosemite, the species shows an association with oak habitat (Rainey and Pierson 1996), mixed deciduous forest (for example, in Yosemite Valley and Wawona), and giant sequoia habitat (Pierson and Heady 1996, Rainey et al. 1992, Pierson et al. 2006). This species occurs at elevations of at least 1,890 meters (6,200 feet) in Yosemite (Pierson and Rainey 1993, 1995, Pierson et al. 2001).

Sierra Nevada mountain beaver
Aplodontia rufa californica

Status. California species of special concern

General Distribution. The Sierra Nevada mountain beaver is endemic and restricted to western North America. Currently seven subspecies are recognized (Dalquest and Scheffer 1945, Hall 1981), including the isolated population *A.r. californica* that extends through much of the Sierra Nevada in eastern California into the western extreme portion of Nevada (Arjo 2007). Sierra Nevada mountain beavers can be found up to 3,000 meters (9,800 feet) in elevation in portions of the Sierra Nevada; however, they are more commonly found at lower elevations in humid, densely vegetated understory

areas (Feldhamer et al. 2003). Sierra Nevada mountain beavers are confined to well-vegetated, moist, cool environments and require a large daily intake of water due to their poor ability to concentrate urine and low tolerance for temperature extremes (Nungesser and Pfeiffer 1965).

Habitat Requirements. Sierra Nevada mountain beavers require abundant riparian plants for harvesting, but the species composition is relatively unimportant (Todd 1990). Good forage cover (e.g., ferns, forbs, and shrubs) as well as large amounts of small-diameter woody debris or uprooted stumps are usually found in areas selected by Sierra Nevada mountain beaver (Todd 1992, Hacker and Coblenz 1993). Willow (*Salix* sp.), alder (*Alnus* sp.), and fir (*Abies* sp.) dominate areas preferred by mountain beavers in the higher elevations of the Sierra Nevada (Arjo 2007).

Status in Merced River Corridor. Todd (1990) estimated that Sierra Nevada mountain beavers occupy approximately 200 to 550 sites in Yosemite. By extrapolating the number of Sierra Nevada mountain beaver sites to the numbers of animals, Todd (1990) estimated from 400 to 6,600 adults living in the park. Of the 41 sites Todd (1990) found occupied by mountain beaver, none fell within the Merced River corridor. Unverified sightings of Sierra Nevada mountain beaver within the corridor include the Civilian Conservation Corps (CCC) camp near El Capitan Meadow in 1993 and along the south fork of the Merced River in Wawona in 1960 (Yosemite Wildlife Observation Database 2011). Although no Museum of Vertebrate Zoology specimens have been taken from within the corridor, several were taken just outside the corridor at the head of Lyell Canyon in 1915 (Museum of Vertebrate Zoology Database 2011). More recently during the Grinnell Resurvey Project, a mountain beaver specimen was recorded from Indian Creek at Chinquapin (Moritz 2007). Mountain beaver sign was also observed along both Lyell Fork and Maclure Creek (at elevations of 2,987 meters to 3,200 meters or 9,800 feet to 10,500 feet) during the Grinnell Resurvey Project (Moritz 2007).

Townsend's big-eared bat
Corynorhinus townsendii townsendii

Status. California species of special concern

General Distribution. The Townsend's big-eared bat occurs throughout the west and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the central and eastern United States. In California, the majority of records are from low-to-moderate elevations, although the species has been found to almost 3,000 meters (9,800 feet) in elevation. In the Sierra Nevada, maternity colonies have been found to up over 1,500 meters (5,000 feet) in elevation. The Townsend's big-eared bat is concentrated in areas with mines (particularly in the desert regions to the east and southeast of the Sierra Nevada) or caves (in the northeast portion of California and karstic regions in the Sierra Nevada and Trinity Alps) as roosting habitat (Pierson and Fellers 1998).

Habitat Requirements. The Townsend's big-eared bat feeds primarily on small moths, with over 90% of its diet composed of lepidopterans. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats (Fellers and Pierson 2002, Sherwin 2005). All known nursery sites in the Sierra Nevada occur at relatively low elevations (the highest being at

1,650 meters (5,400 feet) along the Yuba River), although males have been detected much higher (Pierson et al. 2001). Szewczak et al. (1998) reported two nursery roosts in the White Mountains at elevations higher than 1,700 meters (5,500 feet).

Status in Merced River Corridor. In Yosemite, Townsend's big-eared bats have been detected at Mirror Lake (Pierson and Rainey 1993), Wawona (Pierson and Rainey 1995), and at the barium mine on U.S. Forest Service (USFS) land in El Portal. This mine is fenced and protected from disturbance. This species was detected within the Merced River corridor at two sites in Yosemite Valley in 1996 and 2004. Acoustic surveys conducted by park biologists in summer of 2010 did not detect this species within the Merced River corridor.

Spotted bat
Euderma maculatum

Status. California species of special concern

General Distribution. Although considered one of North America's rarest mammals (Zeiner et al. 1990), the spotted bat is widely distributed throughout much of the western United States, with its range extending as far north as southern British Columbia and as far south as Durango, Mexico (Pierson et al. 2006). In the Sierra Nevada, spotted bats are widely distributed in habitats ranging from desert scrub to montane coniferous forest, with acoustic detections at elevations up to 3,000 meters (9,800 feet) (Pierson et al. 2006).

Habitat Requirements. Limited information suggests that spotted bats do not roost in colonies, predominantly in crevices in high cliff faces (Wai-Ping and Fenton 1989). Surveys in the Sierra Nevada suggest that they are most abundant in areas with fractured rock (Pierson and Rainey 1996, 1998a, b). The spotted bat is capable of long distance and rapid flight, thus foraging ranges can be large. Radio-tracking studies in Arizona documented this species traveling up to 40 kilometers each night (Chambers et al. 2005). In montane habitats, the spotted bat forages over meadows, along forest edges, or in open coniferous woodland. Spotted bats feed primarily on large [(5–12 millimeter (0.20 inch–0.47 inch)] moths, particularly noctuids (Chambers and Herder 2005).

Status in Merced River Corridor. Studies conducted in Yosemite have shown that spotted bats are relatively abundant in many areas where suitable cliff-roosting habitat is prevalent. The majority of detections are from relatively open foraging settings (such as wet meadows) at lower elevations (for example, Yosemite Valley and Wawona) and from a number of sites with elevations up to 3,000 meters (9,800 feet) (Pierson and Rainey 1993, 1995, 1996, Pierson et al. 2001). Yosemite Valley had the highest population of spotted bats of any location surveyed in California (Pierson and Rainey 1995, 1996). Surveys have revealed spotted bats foraging on the north side of El Capitan Meadow, just below El Capitan, Bridalveil Meadow, Leidig Meadow, and Ahwahnee Meadow (Pierson and Rainey 1993). Pierson and Rainey (1993) suggest that spotted bats roost on or near Half Dome and El Capitan. Acoustic surveys conducted in 2010 detected this species in Yosemite Valley, Little Yosemite Valley, Merced Lake, and along the South Fork Merced River.

Western mastiff bat
Eumops perotis

Status. California species of special concern

General Distribution. The subspecies of western mastiff bat that occurs in North America ranges from central Mexico across the southwestern United States (parts of California, southern Nevada, Arizona, southern New Mexico and western Texas) (Eger 1977, Bradley and O'Farrell 1967). The western mastiff bat is found along the west side of the Sierra Nevada, primarily at low to mid-elevations but has been detected up to 3,000 meters (9,800 feet) in the summer (Pierson et al. 2006).

Habitat Requirements. Western mastiff bats are found in a variety of habitats, from desert scrub and chaparral to montane coniferous forest. Its presence is determined by the availability of significant rock features offering suitable roosting habitat (Pierson et al. 2006). This species may forage in flocks, regularly 30 inches to 60 meters over the substrate and can forage considerable distances from their roosting sites (Siders 2005). Foraging habitats include dry desert washes, floodplains, chaparral, oak woodland, open ponderosa pine forest, grassland, agricultural areas, and high-elevation meadows surrounded by mixed-conifer forests (Siders 2005). The diet of western mastiff bats consists primarily of moths (*Lepidoptera*) but also includes beetles, crickets, and katydids (Siders 2005).

Status in Merced River Corridor. In Yosemite, western mastiff bats have been detected in Yosemite Valley in Bridalveil Meadow, El Capitan Meadow, Leidig Meadow, Cook's Meadow, Ahwahnee Meadow, Stoneman Meadow, Wosky Pond, and wetlands near Happy Isles. They were also detected in a few upland habitats east of El Capitan Meadow and Sentinel Beach Picnic Area (Pierson and Rainey 1995). A radio-telemetry study in 1996 detected a large colony in the cliffs west of Cascade Creek (Pierson 1997). Yosemite Valley has the highest population of the western mastiff bat of any locality surveyed in California (Pierson and Rainey 1995). In addition, the species has been captured in Wawona (Pierson and Rainey 1995). Acoustic surveys conducted in 2010 detected this species in El Portal, Yosemite Valley, Little Yosemite Valley, and Merced Lake.

Western red bat
Lasiurus blossevillii

Status. California species of special concern

General Distribution. The western red bat is broadly distributed from southern British Columbia in Canada, through much of the western United States, through Mexico and Central America, to Argentina and Chile in South America (Bolster 2005). In California, the majority of records are from the coastal areas from the San Francisco Bay Area south, plus the Central Valley and bordering foothills, with a limited number of records from southern California extending as far east as western Riverside and central San Diego Counties (Pierson et al. 2006). There are a few records from higher elevations and the east side of the Sierra Nevada (Constantine 1998, Pierson et al. 2000). Winter populations of both sexes are concentrated along the central and southern coast (Pierson et al. 1999).

Grinnell (1918) suggested that western red bats in California were sexually segregated in summer, with males moving to higher elevations, a pattern more recently noted in other species (e.g., Cryan et al. 2000). Western red bats (most likely males or nonreproductive females) have been documented at elevations up to 2,500 meters (8,200 feet) in the Sierra Nevada (Pierson et al. 2000 and 2001).

Habitat Requirements. Western red bats roost on the underside of overhanging leaves. Recent studies in the Central Valley found that summering populations (and breeding females) are substantially more abundant in remnant stands of cottonwood/sycamore riparian that extend greater than 50 meters (164 feet) back from the river than they are in younger, less extensive stands (Pierson et al. 1999). Red bats forage on a number of insect taxa and fly at both canopy height and low over the ground (Shump and Shump 1982). Studies have reported diets consisting of primarily small moths, in addition to a variety of other insects, primarily *Orthoptera* (Ross 1961) but also *Homoptera*, *Coleoptera*, *Hymenoptera*, and *Diptera* (Shump and Shump 1982).

Status in Merced River Corridor. The first record of a western red bat in Yosemite was the capture of three individuals (two adult males and one nulliparous female) over the South Fork Merced River on September 16, 1998. Since then, the species has been documented acoustically at multiple localities up as high as Siesta Lake at 2,422 meters (8,000 feet) (Pierson et al. 2001). Previous acoustic detections have been obtained in association with black cottonwood in both Yosemite and Sequoia National Parks; however, acoustic surveys conducted in 2010 did not detect this species within the Merced River corridor.

Sierra Nevada snowshoe hare
Lepus americanus

Status. California species of special concern

General Distribution. Sierra Nevada snowshoe hares inhabit the mid-elevations (914 meters to 2,133 meters [3,000 feet to 7,000 feet) of the northern and central Sierra Nevada from approximately Mount Lassen in southeastern Shasta County south through Yosemite National Park to Mono and Mariposa counties (Bolster 1998). They have also been recorded from Nevada in the general vicinity of Lake Tahoe (Hall 1946, Richardson 1954). The southern locality is north of Mammoth in Mono County (Bolster 1998). The population status of the Sierra Nevada snowshoe hare is poorly known.

Habitat Requirements. In California, the Sierra Nevada snowshoe hare is primarily found in montane riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral. The early seral stages of mixed conifer, subalpine conifer, red fir, Jeffrey pine, lodgepole pine, and aspen are likely snowshoe hare habitats, primarily along edges and especially near meadows (Orr 1940, Ingles 1965). This species' abundance is highly cyclic in parts of its range, and may be in California as well, but there is little evidence. They prefer dense cover, either in understory thickets of montane riparian habitats or in shrubby understories of young conifer habitats. The snowshoe hares' summer food primarily consists of grasses, forbs, sedges, and low shrubs (Zeiner et al. 1990). They eat needles and the bark of conifers, and leaves and green twigs of willow and alder in the winter (Wolff 1980).

Status in Merced River Corridor. Sierra Nevada snowshoe hare favor dense streamside vegetation. This species typically occurs at elevations below 2,438 meters (8,000 feet); however, its upper elevation limits are unknown. There are a number of apparent sightings from Yosemite above 2,438 meters, although these have not been verified (Yosemite Wildlife Observation Database 2011). Other unconfirmed snowshoe hare sightings within the Merced River corridor include the Merced Lake Ranger Station in 1991 and at the junction of the Merced River and Echo Creek in 1990 (Yosemite Wildlife Observation Database 2011).

Western white-tailed jackrabbit
Lepus townsendii townsendii

Status. California species of special concern

General Distribution. The western white-tailed jackrabbit ranges from the high Sierra crest and upper east slope from the Mount Whitney region at elevations up to 3,657 meters (12,000 feet) in sagebrush, subalpine conifers, alpine dwarf-shrub, and grasslands; it is also found on flat areas east of the mountains, especially in winter.

Habitat Requirements. This species inhabits a variety of habitats, including sagebrush, perennial grasslands, alpine dwarf-shrub, and wet meadows to timberline and above, and early successional stages of a variety of conifer habitats, including lodgepole pine, yellow pine, western juniper, dwarf juniper, red fir, and mixed conifers (Verner and Boss 1980, Williams 1986, Zeiner et al. 1990). In most of these habitats, western white-tailed jackrabbits prefer open or sparsely wooded areas with young or stunted conifers, or scattered shrubs which they use for protective cover during the day (Grinnell and Storer 1924, Verner and Boss 1980, Harris 1982). During the spring through fall, they eat grasses and a variety of herbaceous plants, including cultivated crops (as encountered) (Zeiner et al. 1990). In winter, they prefer buds, bark, and twigs of shrubs, particularly sagebrush, creambush, and small trees (Bailey 1931, Orr 1937).

Status in Merced River Corridor. Unverified sightings of western white-tailed jackrabbit within the Merced River corridor include two sightings in Little Yosemite Valley in 1974 and1975 and a sighting near Merced Lake in 1951 (Yosemite Wildlife Observation Database 2011).

Mount Lyell shrew
Sorex lyelli

Status. California species of special concern

General Distribution. The known range of this species spans a small area of the east-central Sierra Nevada, California, including areas in and around Yosemite in Tuolumne, Mariposa, and Mono counties, at elevations of 2,100 meters–3,150 meters (6,900 feet–10,350 feet) (Grinnell 1933, Williams 1984). This shrew might possibly occur in similar habitat from Mono County to Modoc County, but the area outside its known range has not been adequately surveyed. Recent surveys by the Grinnell Resurvey

Project in 2007 documented this species at the two original localities where it was recorded in the Grinnell era (upper Lyell Basin and Vogelsang Lake) (Moritz 2007). The Mount Lyell shrew was also found to have expanded its known range to the north, and to lower elevations, at Glen Aulin (2,408 meters [7,900 feet]), Kerrick Meadow (2,926 meters [9,600 feet]) and upper Return Creek in Virginia Canyon (3,018 meters [9,900 feet]). This species was found to be uncommon at each locality (Moritz 2007).

Habitat Requirements. Mount Lyell shrew specimens have been found primarily in wetland communities, near streams, in grassy areas, under willows, and in sagebrush steppe communities (Grinnell 1933, Williams 1984, Museum of Vertebrate Zoology Database 2011). This shrew requires moist soil (Ingles 1965) and uses logs, stumps, and other surface objects for cover (Grinnell and Storer 1924). This species eats insects and other invertebrates found while foraging on the ground, in stumps, and in logs (Grinnell and Storer 1924, Ingles 1965).

Status in Merced River Corridor. Surveys for the Mount Lyell shrew in and near Yosemite in 2003–2007 yielded specimens from several locations, one of which was within the Merced River corridor at Cathedral Pass in July 2007 (Museum of Vertebrate Zoology Database 2011). In addition, one male specimen was collected in July 1915 1.5 kilometer from the river corridor at the head of Lyell Canyon (Museum of Vertebrate Zoology Database 2011).

American badger
Taxidea taxus

Status. California species of special concern

General Distribution. American badgers are uncommon but found throughout most of California, irrespective of elevation, from the Central Valley over the Sierra Nevada east into the Great Basin. The badger is most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils (Zeiner et al. 1990).

Habitat Requirements. The American badger prefers open areas and may also frequent brushlands with little groundcover. During periods of inactivity, badgers occupy underground burrows. They frequently reuse old burrows, although some may dig a new den each night, especially in summer (Messick and Hornocker 1981). They are usually found in relatively dry grasslands and open forests (Rahme et al. 1995) and may be active at any hour but are mainly nocturnal. Badgers feed primarily on small rodents usually captured by digging out their burrows. Their main prey species includes ground squirrels, pocket gophers, kangaroo rats, prairie dogs, and mice. Badgers also eat reptiles, insects, earthworms, eggs, birds, and carrion, especially when ground squirrel populations are low (Messick and Hornocker 1981, Zeiner et al. 1990). The American badger is active all year, but it may sleep in its den for several days or weeks during severe winter weather (Nowak 2005).

Status in Merced River Corridor. Unverified American badger sightings within the Merced River corridor include the CCC Camp in El Capitan Meadow in 1993, at the Yosemite Valley Visitor Center in 1954 (Yosemite Wildlife Observation Database 2011), and in Wawona in 2004 (California Natural Diversity Database 2012).

Western pond turtle
Emys marmorata

Status. California Species of Special Concern

General Distribution. The historic range of western pond turtles included the Pacific slope from Puget Sound to Sierra San Pedro Martir in Baja California Norte and isolated inland populations in Washington, Oregon, California, Nevada, and Idaho. Some of these isolated populations may represent introductions (Holland 1994). Western pond turtles have an elevation range from sea level to about 2,042 meters (6,700 feet) but are uncommon anywhere above about 1,524 meters (5,000 feet) (Holland 1994). The species is believed to be declining throughout 75%–80% of its range primarily due to habitat loss, nonnative predators (bullfrogs, large-mouth bass, and possums), and overharvesting for food. According to Jennings and Hayes (1994), the western pond turtle still occurs in 90% of its historic range in the Central Valley and west of the Sierra Nevada, but in greatly reduced numbers.

Habitat Requirements. Western pond turtles inhabit a wide range of permanent and ephemeral aquatic habitats, including ponds, marshes, rivers, streams, and ditches (Stebbins 1985, Behler 2002). In rivers and streams, they usually occupy slow-moving, deep pools with rocky or muddy bottoms and abundant vegetation (Stebbins 1985, Behler 2002). There is also a high correlation between turtle abundance and availability of logs, boulders, vegetation mats, and mud banks to use as basking sites (Bury and Germano 2008). Emergent basking sites such as logs are preferred because they offer some protection from terrestrial predators and offer quick escapes into deep water. This species may also spend a substantial amount of time in upland terrestrial habitats. Terrestrial habitat includes basking sites and nesting habitat. Western pond turtles deposit their eggs on land, usually above the floodplain, up to several hundred feet from water. For nesting, gravid (with eggs) females tend to seek out open areas with sparse, low vegetation (annual grasses and herbs), low slope angle, and dry hard soil.

Status in the Merced River Corridor. Western pond turtle observations have been recorded on 16 occasions in Yosemite. Of these observations, there have only been two sightings of western pond turtles in the Merced River corridor; both sightings were in Yosemite Valley in the 1950s. In 1950, there was a sighting in Sentinel Meadow and, in 1958, another turtle was observed in Stoneman Meadow (CNDDB 2012). There have been no sightings since the 1950s in the Merced River corridor, and the species is believed to be extirpated from the Merced River within Yosemite.

Mount Lyell salamander
Hydromantes platycephalus

Status. California species of special concern

General Distribution. The Mount Lyell salamander, endemic to the Sierra Nevada, ranges from the Sonora Pass (Sonora County) to Silliman Gap, Sequoia National Park (Tulare County). Isolated populations have also been documented in the Desolation Wilderness (El Dorado County) and on the Sierra Buttes (Sierra County). They inhabit high elevation (2,100 meters to 3,700 meters [6,890 feet to

12,139 feet]) snowmelt seep and waterfall habitat throughout the Sierra Nevada. There are also several populations of Mount Lyell salamander at lower elevations in the spray zones of waterfalls in Yosemite Valley (1,200 meters to 1,300 meters [3,937 feet to 4,265 feet]) and in riparian areas at lower elevation (1,400 meters to 2,000 [4,593 feet to 6,562 feet]) on the arid eastern slope of the Sierra Nevada, near the floor of the Owens Valley. The Owens Valley population was treated by CDFG as a separate species (Jennings and Hayes 1994), but recent genetics analysis does not support treating this as a separate species (Rovito 2009). Although the species has the broadest geographic range of any members of its genus *Hydromantes*, within that range, Mount Lyell salamanders may be very patchily distributed with small local populations that might be especially susceptible to local extirpation (Jennings and Hayes 1994). Consequently, they are a California species of special concern. According to Wake and Papenfuss in Lannoo 2005, there is no indication that either the size of the range or the density of this species has changed recently. In fact, new populations are continuing to be discovered. In Yosemite, the species has been observed at a number of sites in recent years.

Habitat Requirements. Juveniles and adults are commonly found in talus slopes of granite where water is flowing. They appear to favor habitats that are downslope of melting snowfields that persist long into or through the entire summer. Mount Lyell salamander may also be found near streams and within the spray zones of waterfalls, under rocks and moss. They are nocturnal and take refuge under rocks during the daytime.

Status in the Merced River Corridor. Mount Lyell salamander observations have been recorded on 140 occasions in Yosemite National Park. Of these observations, 24 records are from the Merced River corridor. Between 1950 and 1954, there were 12 observations at a site along the John Muir Trail between Yosemite Valley and Little Yosemite Valley, and at two sites in Yosemite Valley. In 1969 and again in 1995, there were single observations in Yosemite Valley. One individual was observed along the John Muir Trail between Yosemite Valley and Little Yosemite Valley in 1995. From 2000–2006, there were four sightings along the John Muir Trail between Yosemite Valley and Little Yosemite Valley and five sightings in Yosemite Valley (CNDDB 2012). In 2006, there were also two individuals observed in Yosemite Valley immediately outside of the river corridor buffer.

Park Rare Species

Plants

Spurred snapdragon (*Antirrhinum leptaleum*)

General Ecology and Distribution. Spurred snapdragon, an annual herb, is endemic to California and limited to the seasonally moist areas in the foothill and Sierra Nevada counties between 300 and 1,200 meters.

Habitat and Status in the Project Area. The snapdragon is restricted to small washes and shallow ditches in disturbed areas in Foresta and Wawona.

Lemmon's wild ginger (*Asarum lemmonii*)

General Ecology and Distribution. This perennial herb in the birthwort family is endemic to California and is found in yellow pine forests, red fir forests, and wetland-riparian habitats within the park between 1,100 and 1,900 meters. It occurs almost always under natural conditions in wetlands.

Habitat and Status in the Project Area. Lemmon's wild ginger occurs in shady wet places along creeks and north-facing river banks; it is found in Yosemite Valley and Wawona.

California bolandra (*Bolandra californica*)

General Ecology and Distribution. This perennial herb in the saxifrage family is endemic to California and is restricted to lower and upper montane coniferous forests within the park, in mesic areas and rocky soils. It is restricted to elevations between 2,000-3,000 meters.

Habitat and Status in the Project Area. The California bolandra occurs at Lyell Fork of the Merced River in Segment 1 of the Merced River corridor.

Threadleaf beakseed (*Bulbostylis capillaris*)

General Ecology and Distribution. Threadleaf beakseed is a monocot annual herb in the sedge family; it is native to California and occurs in yellow pine forests and wetland-riparian habitats at elevations between 1,000-2,000 meters.

Habitat and Status in the Project Area. The threadleaf beakseed occurs in meadows and seeps, meadow habitats, and vernally moist areas. It is found in Yosemite Valley (Segment 2).

Mono Hot Spring evening primrose (*Camissonia sierrae ssp. alticola*)

General Ecology and Distribution. This annual herb in the evening primrose family is endemic to California and is found in lodgepole and red fir forests (lower and upper montane coniferous forests) in granitic, gravel and sand pans. The Mono Hot Spring evening primrose is found at elevations of 2,000-2,350 meters.

Habitat and Status in the Project Area. This evening primrose is found on vernally moist gravel and sand pans and at Merced Lake in Segment 1.

Sierra suncup (*Camissonia sierrae ssp. sierrae*)

General Ecology and Distribution. This annual herb in the evening primrose family is endemic to California and is restricted to cismontane woodlands and lower montane coniferous forests at elevations between 500 and 1,300 meters.

Habitat and Status in the Project Area. The milkvetch occurs on granite gravel seepage areas within Yosemite Valley.

Buxbaum's sedge (*Carex buxbaumii*)

General Ecology and Distribution. Buxbaum's sedge is a monocot and perennial herb in the sedge family. It occurs in montane and subalpine fens. It favors wet conditions in meadow habitats at elevations between 1,200-3,300 meters.

Habitat and Status in the Project Area. Buxbaum's sedge occurs in Yosemite Valley.

Silvery sedge (*Carex canescens*)

General Ecology and Distribution. This monocot, perennial herb belongs to the sedge family and is found throughout the Sierra Nevada as well as other mid- to high-elevation sites in North America. It occurs in meadow and perennially moist areas in subalpine and alpine forests at elevations between 1,000-3,200 meters.

Habitat and Status in the Project Area. The silvery sedge is found in lake margins and drainages in wet meadows. Historic collections were taken from Wawona, where this species is commonly found (Segment 7).

Cleft sedge *(Carex fissuricola*)

General Ecology and Distribution. This perennial herb in the sedge family is native to California, but is confined to western North America. It is found in red fir and subalpine forests and wetland-riparian habitats at elevations between 1,500 and 3,500 meters.

Habitat and Status in the Project Area. This sedge occurs in meadow slopes and flats, among rocks, wet areas, and spray zones. It is found at Nevada Falls within Segment 1.

Yosemite sedge (*Carex sartwelliana*)

General Ecology and Distribution. This perennial herb in the sedge family is endemic to California and occurs in yellow pine and red fir forests, as well as wetland-riparian habitats at elevations of 1,200 to 2,600 meters.

Habitat and Status in the Project Area. This sedge is found in meadow borders and moist forest openings. It can be found at Wildcat Creek and in Segments 1, 2, 5, and 7.

Bolander's woodreed (*Cinna bolanderi*)

General Ecology and Distribution. This perennial herb in the grass family is endemic to California and occurs in wetland-riparian habitat, but occasionally is found in non wetlands. It is found in elevations ranging between 1,670 to 2,440 meters.

Habitat and Status in the Project Area. Bolander's woodreed is found in montane stringer meadows and fens in Wawona and Little Yosemite Valley (Segments 7 and 1, respectively).

Narrow leaf Collinsia (*Collinsia linearis*)

General Ecology and Distribution. This annual herb in the plantain family is primarily limited to California, with some extensions into adjacent states. It is found in lower- to mid-elevation (200 to 2,000 meters) coniferous forests on rock outcrops and dry slopes. It reaches the southern extent of its range in Mariposa County.

Habitat and Status in the Project Area. Narrow leaf collinsia is found in El Portal and Wawona (Segments 4 and 7, respectively), where it is restricted to dry, metamorphic rock outcrops along the metamorphic-granitic contact zone.

Short-bracted bird's beak (*Cordylanthus rigidus ssp. brevibracteus*)

General Ecology and Distribution. Short-bracted bird's beak is an annual herb in the broomrape family and is endemic to California. It is widely distributed in the Sierra Nevada from Mariposa County southward to Kern County at elevations ranging between 1,100 to 2,500 meters.

Habitat and Status in the Project Area. This plant occurs on the north side of Yosemite Valley, where it receives full sun on dry sandy roadside habitats. Known populations occur one mile east of Cascade Creek in Segment 2 (Yosemite Valley).

Mountain lady's slipper (*Cypripedium montanum*)

General Ecology and Distribution. Mountain lady's slipper is a perennial herb in the orchid family; it is native to California and is confined to western North America in yellow pine forests, mixed evergreen forests, and wetland-riparian habitats at elevations between 200 to 2,200 meters. In the Sierra Nevada, it occurs in Tuolumne, Mariposa, and Madera Counties. It also occurs in northwestern California, the Cascade Range, southwest San Francisco Bay Area, and Modoc Plateau.

Habitat and Status in the Project Area. This herb occurs on deep humus and shade of canyon bottoms. It is found in Wawona and below Yosemite Valley.

Stream orchid (*Epipactis gigantea*)

General Ecology and Distribution. This species, a perennial herb in the orchid family, is widely distributed throughout California and North America. In Yosemite, it is restricted to moist granitic ledges and planted in landscaped areas at elevations between 1,500 to 2,600 meters.

Habitat and Status in the Project Area. This species occurs in Yosemite Valley within a number of landscaped areas. Former populations above Happy Isles were obliterated by the rockfall in 1996. Natural habitat for this species exists throughout the Valley in perennially moist, shaded areas.

Purple fawn-lily (*Erythronium purpurascens*)

General Ecology and Distribution. This perennial herb is endemic to California and the Sierra Nevada. It grows along shaded streams and river corridors in montane coniferous forests at elevations of 1,500 to 2,700 meters.

Habitat and Status in the Project Area. This species is known from riparian corridors in the eastern end of Yosemite Valley. It was collected in the past for its showy flowers and is possibly extinct.

Northern mannagrass (*Glyceria borealis*)

General Ecology and Distribution. This perennial herb in the grass family is native to California and is also found elsewhere in North America and beyond. It occurs in yellow pine and red fir forests, as well as wetland-riparian habitats. In Yosemite, it is found in elevations ranging between 800-1,250 meters.

Habitat and Status in the Project Area. Northern managrass grows in marshes and shallow lake borders in Yosemite Valley (Segment 2).

California sunflower (*Helianthus californicus*)

General Ecology and Distribution. This perennial herb in the aster family is native to California and is confined to western North America. It occurs in foothill woodland, valley grassland, freshwater wetlands, and wetland-riparian habitats at elevations ranging between 1,600 and 2,000 meters.

Habitat and Status in the Project Area. California sunflower grows along streambanks, within meadows and freshwater marshes, seeps, and seasonally inundated areas. It occurs in Wawona (Segment 7).

Common mare's tail (*Hippuris vulgaris*)

General Ecology and Distribution. This perennial aquatic herb in the plantain family is native to California but is also found elsewhere in North America and beyond. It occurs in a variety of habitats, including yellow pine, red fir, lodgepole, and subalpine forests; foothill woodland, chaparral, valley grassland, and wetland-riparian habitats at elevations ranging between 0 to 2,600 meters. It occurs almost always under natural conditions in wetlands.

Habitat and Status in the Project Area. This species occurs within lakes, ponds, springs, rivers in Little Yosemite Valley (Segment 1).

Redray alpinegold (*Hulsea heterochroma*)

General Ecology and Distribution. This perennial herb in the aster family is native to California and elsewhere outside of California, but is confined to western North America. It occurs in chaparral and openings in yellow pine forests between 300 and 2,500 meters in elevation.

Habitat and Status in the Project Area. This species occurs in Yosemite Valley and 5 miles above Nevada Fall (Segments 2 and 1, respectively).

Western quillwort (*Isoetes occidentalis*)

General Ecology and Distribution. This fern is native to California and belongs to the quillworts family. It occurs in wetland-riparian habitats in the high Sierra Nevada, Klamath Ranges within California at elevations between 1,500 and 2,500 meters. Outside of California, it can be found in British Columbia and Colorado.

Habitat and Status in the Project Area. Western quillwort occurs in mountain lakes and rivers. In the Project Area, it is found in Segment 1 (Little Yosemite Valley).

Sierra laurel (*Leucothoe davisiae*)

General Ecology and Distribution. This shrub, a perennial in the heath family, is found slightly beyond California's boundaries and is restricted to wetland, bog, and moist habitats at elevations between 1,300 and 2,600 meters.

Habitat and Status in the Project Area. Within the Merced River corridor, Sierra laurel is found in moist, shaded drainage bottoms along creeks and rivers within Yosemite Valley (Segment 2).

False pimpernel (*Lindernia dubia var. anagallidea*)

General Ecology and Distribution. This annual herb in the plantain family is found in freshwater wetlands and meadows at low to mid elevations (500 to 1,600 meters) in California and North America.

Habitat and Status in the Project Area. False pimpernel is found in meadow soils throughout Yosemite Valley (Segment 2) that remain moist for the duration of the plant's seasonal life span.

Tanoak (*Lithocarpus densiflorus var. echinoide*s)

General Ecology and Distribution. Tanoak is a tree or shrub in the oak family and is native to California. It occurs on dry shady forest conditions in slope habitats at elevations ranging between 600 and 2,000 meters.

Habitat and Status in the Project Area. Tanoak occurs along the Merced River below Yosemite Valley (Segment 2) and in the El Portal area (Segment 3).

Northern bugleweed (*Lycopus uniflorus*)

General Ecology and Distribution. This perennial herb in the mint family is native to California and is also found elsewhere in North America and beyond. It occurs in freshwater wetlands and wetland-riparian habitat at elevations ranging between 1,600 and 2,000 meters.

Habitat and Status in the Project Area. Northern bugleweed occurs in moist areas, marshes, adjacent to springs, and along the Merced River banks from El Portal up to the Merced Gorge (Segments 4 and 3, respectively).

Yellow and white monkeyflower (*Mimulus bicolor*)

General Ecology and Distribution. Yellow and white monkeyflower, an annual herb from the lopseed family, is endemic to California. It occurs in foothill woodland, yellow pine forest, and chaparral habitats at elevations ranging between 360 and 2,100 meters.

Habitat and Status in the Project Area. This species occurs under vernally moist conditions, usually in non-wetlands, but occasionally found in wetlands and river bottomlands. In the Project Area, it is found in Wawona (Segment 7).

Small flowered monkeyflower (*Mimulus inconspicuus*)

General Ecology and Distribution. This annual herb in the lopseed family is endemic to California. It is restricted to wetlands and seasonally moist sites in lower montane forests and foothill woodlands in partial shade at elevations between 160 and 2,000 meters.

Habitat and Status in the Project Area. Small flowered monkeyflower occurs at the mouth of Moss Creek and also in Segments 2, 3, 7, and 8.

Cutleaf monkeyflower (*Mimulus laciniatus*)

General Ecology and Distribution. This annual herb in the lopseed family is endemic to California. It typically occurs in red fir and yellow pine forests and wetland-riparian habitats at elevations ranging between 900 and 2,000 meters.

Habitat and Status in the Project Area. Cutleaf monkeyflower occurs in chaparral, lower and upper montane coniferous forests, vernally moist seepage areas, and mesic areas with granitic substrate in Yosemite Valley (Segment 2).

Yellow-lip pansy monkeyflower (*Mimulus pulchellus*)

General Ecology and Distribution. This annual herb in the lopseed family is endemic to California and limited to Mariposa, Tuolumne, and Calaveras Counties. It is restricted to wetlands and seasonally moist sites at elevations ranging between 600 and 2,000 meters.

Habitat and Status in the Project Area. This species occurs in vernally mesic meadows and lower montane coniferous forests within Yosemite Valley (Segment 2).

Sierra sweet-bay (*Myrica hartwegii*)

General Ecology and Distribution. This perennial shrub in the wax-myrtle family is endemic to California. It is limited in occurrence to streambanks and riparian communities at low to moderate elevations (300 to 1,500 meters) in the Sierra Nevada, where it forms small thickets along the river.

Habitat and Status in the Project Area. Patchy distribution of Sierra sweet-bay occurs along the South Fork of the Merced River through Wawona as well as along tributaries to the South Fork and Big Creek near the South Entrance Station.

California bog asphodel (*Narthecium californicum*)

General Ecology and Distribution. This perennial shrub in the Nartheciaceae family and is endemic to California. It occurs along streambanks and in meadows within yellow pine, red fir, and douglas-fir forests, as well as wetland-riparian habitat. Elevation range for this species is between 700 to 2,600 meters.

Habitat and Status in the Project Area. This species occurs in fens, seeps, and adjacent to streams and waterfalls. In the Project Area, it can be found at Bridalveil Falls in Yosemite Valley (Segment 2).

Azure penstemon (*Penstemon azureus* ssp. *angustissimus*)

General Ecology and Distribution. This perennial herb in the plantain family is endemic to California and is near its southern extent in Yosemite. It is generally found in moist woodlands and open forests at lower to moderate elevations in the Sierra Nevada at elevations of 300 to 700 meters.

Habitat and Status in the Project Area. This herb is found in scattered locations in Yosemite Valley (Segment 2). It was first described from collections taken in Yosemite Valley, although that original population appears to have disappeared.

Purdy's foothill penstemon (*Penstemon heterophyllus var. purdyi*)

General Ecology and Distribution. This perennial herb in the plantain family is endemic to California. It is generally found under dry conditions in slope habitats of chaparral, foothill woodland, and yellow pine forest habitats. It occurs at elevations of 50 to 1,600 meters.

Habitat and Status in the Project Area. This penstemon occurs in Yosemite Valley (Segment 2).

Tansy Leafed Phacelia (*Phacelia tanacetifolia*)

General Ecology and Distribution. This annual herb in the borage family is found throughout California and is confined to western North America. It grows in seasonally moist, sandy and gravelly open areas.

Habitat and Status in the Project Area. This species occurs at scattered locations throughout Yosemite Valley at elevations of 1,000 to 2,000 meters, where it blooms and sets seed early each spring.

Coleman's piperia (*Piperia colemanii*)

General Ecology and Distribution. This perennial native herb is endemic to California and limited to the high North Coast Ranges, high Cascade Range, and the Sierra Nevada. It grows on sandy substrates in lower montane coniferous forests and are also found in chaparral habitat at 1,200-2,300 meters in elevation.

Habitat and Status in the Project Area. This species occurs in Little Yosemite Valley (Segment 1).

Torrey's popcornflower (*Plagiobothrys torreyi var. torreyi*)

General Ecology and Distribution. This annual herb in the borage family is endemic to California and occurs in Mariposa, Fresno, and Kern Counties. Suitable habitat include meadows within yellow pine, red fir, and lodgepole pine forests, as well as subalpine forests at elevations ranging between 1,200 and 3,400 meters.

Habitat and Status in the Project Area. This herb is found within moist meadows and flats, as well as forest edges within Yosemite Valley (Segment 2).

Nuttall's pondweed (*Potamogeton epihydrus* (previously *P. ephydrus ssp. nuttallii*))

General Ecology and Distribution. This perennial herb in the pondweed family is native to California at elevations ranging between 400 and 1,900 meters; it occurs in the outer North Coast Ranges, high Sierra Nevada, Modoc Plateau, and elsewhere in North America.

Habitat and Status in the Project Area. Nuttall's pondweed is restricted to freshwater wetlands and wetland-riparian habitats. In Yosemite Valley (Segment 2), it can be found in freshwater marshes and tanks.

Valley oak (*Quercus lobat*a)

General Ecology and Distribution. This tree is endemic to California and occurs throughout California, with the exception of eastern California and desert areas.

Habitat and Status in the Project Area. Valley oak occurs on deep soil on slopes and in valleys. It is known from a few majestic specimens in El Portal (Segment 4) at elevations of approximately 720 meters.

Wood saxifrage (*Saxifraga mertensiana*)

General Ecology and Distribution. This perennial herb in the saxifrage family is endemic to California and limited to the northern and central Sierra Nevada at elevations of 1,000 to 2,500 meters. It reaches its southern extent in Mariposa County, where it grows on mossy rocks and moist cliffs in lower to montane coniferous forests.

Habitat and Status in the Project Area. This species occurs at scattered locations in moist, shaded sites throughout Yosemite Valley (Segment 2).

Oregon saxifrage (*Micranthes oregana (*previously *Saxifraga oregana*))

General Ecology and Distribution. This perennial herb in the saxifrage family is native to California but is also found in other areas of western North America. It occurs in meadows within yellow pine, red fir, lodgepole pine, and subalpine forests, as well as wetland-riparian communities at elevations of 150 to 2,500 meters.

Habitat and Status in the Project Area. This species occurs in meadows and seeps, almost always under wet conditions, in Yosemite Valley and Little Yosemite Valley (Segments 2 and 1, respectively).

Bolander's skullcap (*Scutellaria bolanderi*)

General Ecology and Distribution. This perennial herb in the mint family is endemic to California. It is primarily found in lower montane forests in the Sierra Nevada, where it occurs in gravelly soils along streambanks and in California black oak woodlands and ponderosa pine forests at elevations between 300-2,000 meters.

Habitat and Status in the Project Area. This species is known from isolated populations scattered throughout the Wawona basin (Segment 7).

Clark's ragwort (*Senecio clarkianus*)

General Ecology and Distribution. This perennial herb in the aster family is endemic to California and occurs in red fir and lodgepole forests, as well as wetland-riparian habitats at elevations ranging between 1,400 and 2,700 meters.

Habitat and Status in the Project Area. It occurs in damp montane meadows within Wawona (Segment 7).

Small bur reed (*Sparganium natans*)

General Ecology and Distribution. This perennial herb in the Typhaceae family is native to California, but is also found elsewhere in North America and beyond. It occurs at lake margins and edges of freshwater wetlands and wetland-riparian habitats at elevations ranging between 2,000 and 2,500 meters.

Habitat and Status in the Project Area. This species is found in tributaries of the Merced River in Segments 2 and 7 (Yosemite Valley and Wawona, respectively).

Sierra bladdernut (*Staphylea bolanderi*)

General Ecology and Distribution. This tree or shrub belongs to the Staphyleaceae and is endemic to California; it occurs in canyons within chaparral, foothill woodland, and yellow pine forest communities at elevations between 240 and 1,720 meters.

Habitat and Status in the Project Area. This species occurs in shaded canyon habitats along the Merced River Canyon in El Portal and the Merced Gorge Area (Segments 4 and 3, respectively).

Narrowleaf trillium (*Trillium angustipetalum*)

General Ecology and Distribution. This perennial herb in the Melanthiaceae family is almost entirely restricted to California. It is most common in the coastal ranges of the state, but occurs in limited,

small populations in the Sierra Nevada where it is found in shady areas within mature montane coniferous forests with well-developed duff and litter layers. Elevations range from 100 to 2,000 meters. This species may be at risk due to the lack of natural fire patterns, which allows an unnatural buildup of duff and litter to the exclusion of the plant, as well as overly intense fire behavior resulting in loss of root and plant materials through overheating.

Habitat and Status in the Project Area. This species is scattered over a 10-acre area along the south side of the South Fork of the Merced River in Wawona (Segment 7), near the eastern end of River Road. It also occurs in Yosemite Valley (Segment 2).

California red huckleberry (*Vaccinium parvifolium*)

General Ecology and Distribution. This shrub belongs to the heath family and is endemic to California. It occurs in canyons within redwood forest, red fir forest, and mixed evergreen forest communities at elevations between 1,400 and 2,500 meters.

Habitat and Status in the Project Area. This species prefers moist, shaded drainage bottoms along creeks and rivers. It occurs in Wawona (Segment 7).

Hall's wyethia (*Wyethia elata*)

General Ecology and Distribution. This species, a perennial herb in the aster family, is endemic to California. It is restricted to the southern Sierra Nevada foothills and lower montane forests at elevations between 1,000 and 1,400 meters and reaches the northern extent of its range in Yosemite.

Habitat and Status in the Project Area. It is found in open woodlands and forests in the Wawona basin (Segment 7).

CHAPTER V. ENVIRONMENTAL EFFECTS

Methods Used to Assess Effects

Assumptions

The following assumptions were used as a basis in the analysis of effects on special-status species:

- The greater the size of a biotic community and the stronger its links to neighboring communities, the more valuable it is to the integrity and maintenance of biotic processes that sustain special-status species. Development limits the size of a community and fragments and disassociates communities from each other.

- The more developed areas become, the less valuable they are as habitat for special-status species. New development would increase human presence and increase the potential for soil, wildlife, and vegetation disturbance. The potential for negative wildlife interactions (such as human injury from wildlife and the introduction of unnatural food sources) also would increase. If development were removed from an area, the value of the habitat for special-status species would increase. In some cases, the dispersal of visitors over a wider area that may follow removal of developed facilities may well have a greater impact than focused visitor use within the well-defined area of development. Human effects can also improve habitat quality for non-native species and unnaturally increase the abundance of some native species, both of which can have an adverse effect on special-status species.

- The presence of humans and the effects of human food on the behavior, distribution, and abundance of wildlife species would continue in existing developments.

- Roads can change water inflow and outflow patterns and may dewater sections of meadow or wetland habitat (USFS 1996). Roads can also cause mortality of wildlife and may form barriers and fragment wildlife habitat.

- Development and effects in riparian zones may influence critical water quality elements such as temperature, suspended sediments, and nutrients. These elements interact in complex ways in aquatic systems and directly and indirectly influence patterns of growth, reproduction, and migration of aquatic organisms.

- Development that has an adverse effect on habitat features that are important to certain special-status species (e.g., particular plant species upon which a species relies, or habitat features that define suitable habitat for a species) can have an acute, negative effect on those species.

- Radiating effects of human use can affect use of habitats adjacent to developed areas by special-status species, even though such habitats are not directly affected by the development.

- Implementation of threatened or endangered species recovery plans and other formal agreements between the U.S. Fish and Wildlife Service and the National Park Service would not be affected by the management direction resulting from the *Merced River Plan/DEIS*. The current management direction for special-status species would continue to remain in effect.

Special-Status Plants

The assessment of effects on special-status plants was based on the following:

- The sensitivity of the individual species to effects (based on the rarity, resilience, size of population, and extent of the species throughout the park)
- The location of the species in relation to the Preferred Alternative

Special-Status Wildlife

The assessment of effects on special-status wildlife was based on the following:

- The possibility of a species or its preferred habitat occurring in those areas expected to be affected
- The direct loss of habitat
- The partial loss of habitat from its modification
- The species' sensitivity to disturbance from human activities that may alter use of habitats in areas adjacent to development

Habitat fragmentation was also a critical component of the analysis. Restored blocks of habitat should be large enough to support viable populations, and intact habitat must not be reduced or affected to the point that it will no longer support viable populations.

Impact Analysis

Impacts on special status species from actions proposed in the *Merced River Plan/DEIS* were evaluated in terms of the context, intensity, duration, and type of impact, as defined below. Generally, the methodology for natural resource impact assessment follows direction provided in the *Council of Environmental Quality Regulations for Implementing the National Environmental Policy Act*, Section 1508.27.

- **Context.** The context of the impact considers whether the impact would be local, segmentwide, parkwide, or regional. For the purposes of this analysis, local impacts would be those that occur in a specific area within a segment of the Merced River. This analysis will further identify if there would be local impacts in multiple segments. Segmentwide impacts would consist of a number of local impacts within a single segment or larger-scale impacts that would affect the segment as a whole. Parkwide impacts would extend beyond the river corridor and the study area within Yosemite National Park. Regional impacts would have an influence in a Sierra-wide context. Context suggests that certain impacts depend on the setting of the proposed action. For instance, impacts that would reduce the connectivity between habitat types could be minor if such connections are abundant in a given region, moderate or major if they are not.

- **Intensity.** Impacts can be adverse or beneficial. A negligible impact means that special status species would not be affected, or effects would not be measurable. A minor impact would be

detectable; both short-term and long-term impacts could potentially affect breeding success and habitat availability. Mitigation measures would be sufficient to offset minor adverse effects. A moderate impact would be readily apparent and would result in the reduction or expansion of potential habitat required to meet life requisite needs of one or more species. Mitigation would be required to offset moderate adverse impacts. A major impact would be readily apparent and would result in the direct or indirect gain or loss of occupied breeding sites, take of individuals, or changes to habitat affecting potential for occupancy or reproductive potential. Extensive mitigation would be necessary to offset adverse effects and its success could not be guaranteed. Impacts to rare, threatened, and endangered species would be quantified where possible by determining the acreage of habitat for each species altered. The amount of each habitat type that would be directly affected would be determined by a comparative analysis of suitable habitat spatial data representing existing conditions and conditions under proposed management actions. Effects associated with habitat distribution and patch size will also be addressed quantitatively where baseline data are available to support such an analysis. Other potential direct and indirect effects to rare, threatened, and endangered species habitats, such as effects associated with invasive species or the potential for disturbance to populations due to increases in human activity, will be analyzed qualitatively.

- **Duration.** A short-term impact would have an immediate effect on native habitat, diversity, and native populations but would not cause long-term declines in populations or diversity. Short-term impacts are normally associated with transitional types of activities, such as facility construction. Long-term impacts would lead to a loss of native habitat, diversity, and species populations as exhibited by a decline in species abundance, viability, and/or survival.

- **Type.** The type of impact considers whether the impact would be beneficial or adverse. Adverse impacts are those that alter the range, location, number, or population of a species or its habitat. Beneficial impacts would improve one or more of these characteristics.

Cumulative Analysis

Cumulative effects on rare, threatened, and endangered species discussed herein are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region. The intensity of impact depends on whether the impacts are anticipated to interact cumulatively. For example, factors external to the park, such as broad regional habitat loss and pesticide use, can combine with existing, in-park impacts, such as from nonnative species, to cause declines in rare, threatened, or endangered amphibians (such as Sierra Nevada yellow-legged frog and Yosemite toad), which would be an adverse, cumulative impact. The projects identified below are those that have the potential to affect populations of rare, threatened, or endangered species (i.e., within the Merced River corridor) as well as large-scale or regional populations of the same species.

Past Actions

Natural habitats in Yosemite have been manipulated almost since the beginning of the park. Regional wildlife and vegetation patterns have been historically affected by logging, fire suppression, rangeland clearing, grazing, mining, draining, damming, diversions, and the introduction of nonnative species. Mammal species that survive but are extremely rare are the Pacific fisher and Sierra Nevada red fox. Several bird species have probably been reduced in Yosemite Valley by visitor activity but are present

in less disturbed areas of the park. Willow flycatchers no longer nest in the Valley—probably due as much to parasitism by brown-headed cowbirds as to destruction of riparian and meadow habitat. Amphibians in Yosemite have suffered population declines similar to those seen in the rest of the Sierra Nevada (Drost and Fellers 1996). Red-legged frogs likely were found in the Valley in the past but are now are presumed extirpated. Significant factors in their disappearance probably include reduction in perennial ponds and wetlands, and predation by bullfrogs. At higher elevations, Sierra Nevada yellow-legged frogs and Yosemite toads are still present in a number of areas but are severely reduced in population and range. Foothill yellow-legged frogs have disappeared completely from the park, if not the entire Sierra Nevada. Research continues to identify the causes of Sierra Nevada-wide amphibian declines; known and possible causes include habitat destruction, nonnative fish, pesticides, and diseases. Past and ongoing activities that affect rare, threatened, or endangered species include construction of dams, diversion walls, bridges, roads, pipelines, riprap, recreational use, buildings, campgrounds, and other recreational features.

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

Past projects and plans that could have a cumulative effect on special status species in the Merced River Wild and Scenic corridor include the following:

> ***Management and Restoration*** – *South Fork and Merced Wild and Scenic River Implementation Plan*, Cascades Diversion Dam Removal, Cook's Meadow Ecological Restoration, Fern Springs Restoration, Happy Isles Dam Removal, Happy Isles Fen Habitat Restoration Project, Happy Isles Gauging Station Bridge Removal, Merced River Ecological Restoration at Eagle Creek Project

Present Actions

Current facility-related projects and plans that could have a cumulative effect on special status species include the following:

> ***Facility Development*** – Crane Flat Utilities, *East Yosemite Valley Utilities Improvement Plan/Environmental Assessment*, Wahhoga Indian Cultural Center, Parkwide Communication Data Network, South Entrance Station Kiosk Replacement, Tioga Road Rehabilitation

Beneficial impacts of present management and restoration actions are similar to those discussed for past actions. Specific examples of present projects and plans with beneficial effects include the following:

Management and Restoration – *Yosemite Vegetation Management Plan*, General Ecological Restoration, 2004 *Fire Management Plan/EIS*, Fuels reductions/forest rehabilitation projects (USFS), *Tuolumne Wild and Scenic River Comprehensive Management Plan*

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions proposed in the region that could have a cumulative effect on regional special status species include:

- changing demographics of visitors in Yosemite
- climate change
- concessioner parking lot restoration
- Restoration of the Mariposa Grove Ecosystem
- *Yosemite Wilderness Stewardship Plan/EIS*

Federal Endangered Species

Wildlife

Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*)

Direct and Indirect Effects. There would be no direct or indirect effects on the Sierra Nevada bighorn sheep or its preferred habitat. Habitat for the Sierra Nevada bighorn sheep is located in steep terrain in the northeastern portion of Yosemite Park, outside of the Merced River corridor. Additionally, most of the herd inhabits lands outside of the Park. No development would occur within suitable habitat for this species. Therefore, there would be no direct or indirect effects on the Sierra Nevada bighorn sheep.

Cumulative Effects. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service) and 2009 Fire Management Plan could provide benefits to the size, integrity, and connectivity of suitable habitat for the Sierra Nevada bighorn sheep. These regional plans would have a long-term, moderate, beneficial effect on the Sierra Nevada bighorn sheep.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Sierra Nevada bighorn sheep.

Federal Threatened Species

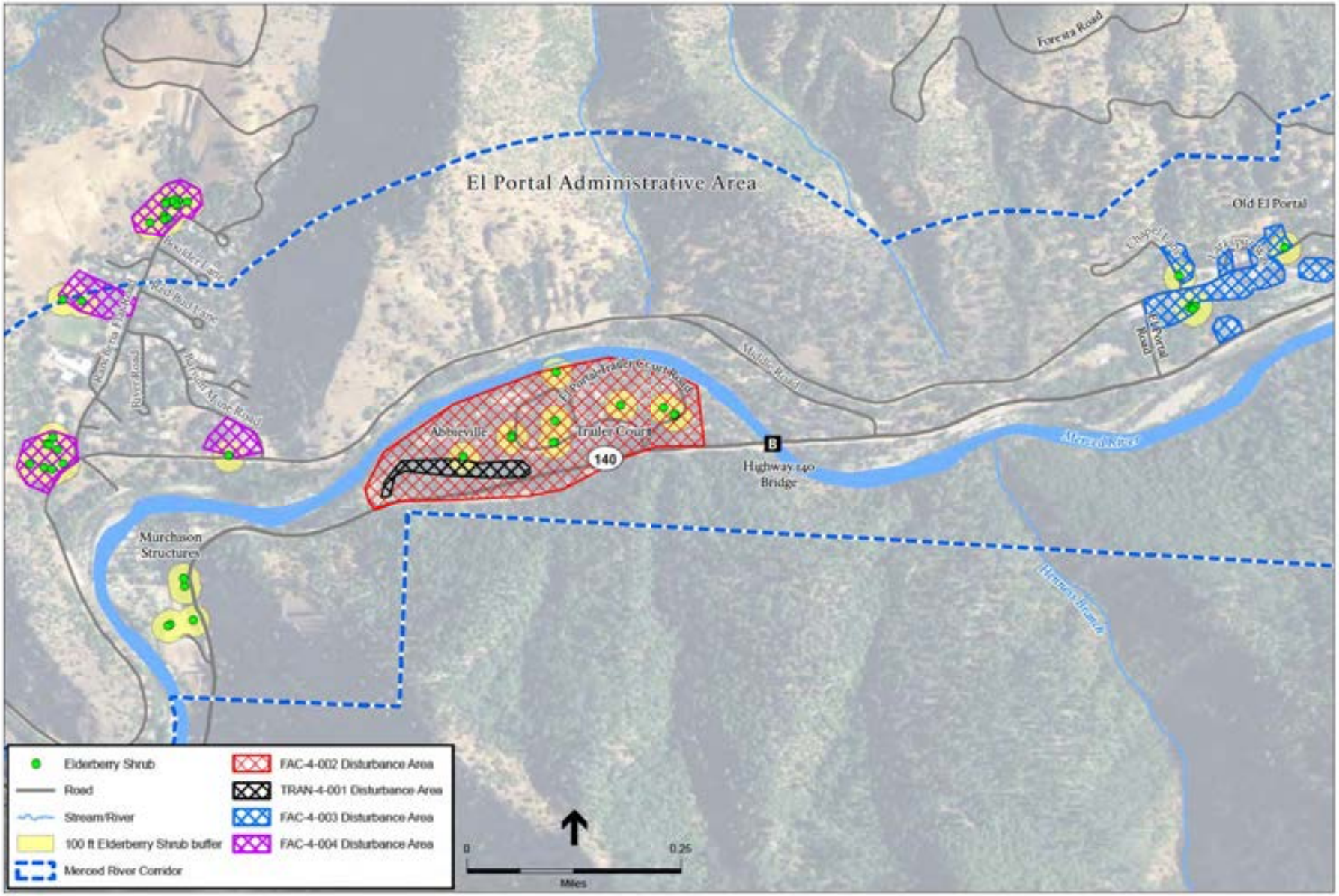
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

Direct and Indirect Effects. Potential Valley elderberry longhorn beetle habitat is defined by the presence or absence of elderberry plants in areas below 3,000 feet in elevation. Potential habitat for this species occurs in Segments 3 and 4 (Merced Gorge and El Portal, respectively), generally in riparian areas; however, activities that have the potential to affect Valley elderberry longhorn beetle would only occur in Segment 4 (El Portal, see **figure N-1**).

Approximately 124 elderberry plants of a size sufficient to support the Valley elderberry longhorn beetle occur in areas of potential development or management activities in El Portal. Valley elderberry longhorn beetle exit holes that verify beetle activity were found in 11 of these elderberry plants, though beetle larvae could still be present in elderberry plants without exit holes. Actions in Segment 4, including moving temporary housing units to El Portal and development at the Abbieville and Trailer Village, would result in potential indirect or direct impacts on elderberry shrubs, including removal of shrubs. Approximately 37 elderberry plants were documented within potential areas of ground disturbance, seven with exit holes. Complete impact avoidance would not be possible for these plants. The infill in El Portal would affect up to nine elderberry shrubs with stems greater than one inch in diameter. The development at Abbieville would affect up to 16 shrubs, while the development at Trailer Village would affect up to 12 shrubs as proposed in the *Merced River Plan/DEIS*. However, planning and implementation would strive to minimize effects to riparian vegetation and shrubs that are retained in the area. For example, new employee housing would be constructed outside of the 100-year floodplain to avoid impacts to riparian vegetation. Nevertheless, shrubs retained adjacent to proposed developed areas could be subject to future damage from human activities, such as unauthorized pruning and vehicles.

Direct or indirect impacts on valley elderberry longhorn beetle habitat would result in adverse effects to this species. To minimize and avoid potential effects where possible, NPS will implement avoidance and mitigation measures outlined in the 1999 USFWS *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Conservation Guidelines) (mitigation measure MM-WL-4, as applicable; see Appendix C). The Conservation Guidelines prescribe conservation measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle, including specific procedures for transplanting, requirements to plant additional seedlings or cuttings and associated native species, protective measures, maintenance, and reporting.

Using the measures outlined in the Conservation Guidelines, the NPS estimates that 37 elderberry plants would need transplanting, 174 additional seedlings or cuttings would need to be planted, along with 101 associated native plants. In addition, a 1.53 acre Habitat Conservation Area would be required to protect transplants and establish required associated native plants. The NPS proposes to establish a 1.53 acre Habitat Conservation Area at the Greenemeyer Sand Pit, pending confirmation from the USFWS (see Appendix C for details).



SOURCE: NPS, 2011, 2012; NAIP, 2012

Merced River Comprehensive Management Plan Biological Assessment . 210436

Figure N-1

Segment 4 – Elderberry Shrubs

Ecological restoration actions occurring in El Portal include riparian revegetation and removal of abandoned utilities and facilities. Additionally, no new development would occur within 150 feet of the river. These actions combined would result in long-term beneficial effects to the Valley elderberry longhorn beetle, as this species' primary habitat occurs within riparian habitat.

Cumulative Effects. Foreseeable projects that could have adverse effects on the Valley elderberry longhorn beetle and its habitat include the Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan and Parkwide Communication Data Network. These projects would have the potential to damage or destroy elderberry plants and directly affect local Valley elderberry longhorn beetle populations.

Long-term, beneficial effects would be expected from the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service) because these planning efforts could lead to greater protection of elderberry plants.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on valley elderberry longhorn beetle.

Federal Candidate Species

Wildlife

Yosemite toad (*Bufo canorus*)

Direct and Indirect Effects. The areas of likely occurrence of Yosemite toads in the study area, based upon previous observations and collections, are in high-elevation meadows and lakes in Segment 1 (Merced River above Nevada Fall) and Segment 5 (South Fork Merced River above Wawona). The Yosemite toad is regarded as a high-elevation species. There is a single historic record of this species in Yosemite Valley that places it approximately 2,500 feet below its usual range. It is unlikely that this record reflects the sustainable range of Yosemite toads. The proposed actions within Segments 1 and 5 are primarily ecological restoration actions, and thus would result in direct and indirect negligible effects to the Yosemite toad. Meadow restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in long-term, beneficial effect to the Yosemite toad. Meadow restoration at the Merced Lake High Sierra Camp area would also have long-term beneficial impacts on Yosemite toads.

Overall, effect of the Preferred Alternative on Yosemite toads is expected to be long-term, local and beneficial.

Cumulative Effects. Projects that have an appreciable effect on high-elevation meadow habitats are most likely to affect the Yosemite toad. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable habitat for the Yosemite toad. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the Yosemite toad include the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Yosemite toad.

Sierra Nevada yellow-legged frog (*Rana sierrae*)

Suitable habitat for this species occurs in Segments 1 (Merced River above Nevada Fall) and 5 (South Fork Merced River above Wawona) in high elevation lakes, ponds, and streams near the South Fork above Wawona. The proposed actions within these segments are primarily ecological restoration actions, and thus would result in direct and indirect negligible effects to the Sierra Nevada yellow-legged frog. Meadow restoration, cease of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in beneficial effect to the Sierra Nevada yellow-legged frog as these habitats often form direct connections to other aquatic habitats (e.g., lakes and streams). Meadow restoration at the Merced Lake High Sierra Camp area would result in beneficial effect to Sierra Nevada yellow-legged frog.

Overall, effect of the Preferred Alternative on Sierra Nevada yellow-legged frog is expected to be long-term, local and beneficial.

Cumulative Effects. Projects that have an appreciable effect on high-elevation aquatic habitats are most likely to affect the Sierra Nevada yellow-legged frog. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic

Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve water quality and habitat for the Sierra Nevada yellow-legged frog. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the Sierra Nevada yellow-legged frog include the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Sierra Nevada yellow legged frog.

California wolverine (*Gulo gulo luteus*)

Direct and Indirect Effects. Wolverines typically inhabit semi-open terrain at or above the timberline from spring through fall, and then move to lower-elevation forests in winter. They have been seen in a variety of habitats, including treeless barrens, alpine meadows, and mixed coniferous forests (Thelander et al. 1994). The most important habitat characteristic appears to be a low level of human disturbance (Thelander et al. 1994).

The Merced River corridor supports wolverine habitat in Segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona, respectively). Proposed actions within these two segments primarily involve ecological restoration of meadow habitat. Additionally, given existing low level of development and apparent scarcity of wolverines in the Sierra Nevada, ecological restoration activities at these two segments would be expected to result in negligible effects to the species during restoration activities. Overall, impacts on wolverines under the Preferred Alternative would be beneficial following habitat restoration.

Cumulative Effects. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service) and 2009 Fire Management Plan could provide benefits to the size, integrity, and connectivity of suitable habitat for the California wolverine. These regional plans would have a long-term, moderate, beneficial effect on suitable habitat, depending upon the extent of their implementation over time.

Given the high-elevation occurrence of wolverines and their aversion to human contact, no foreseeable projects would have an effect on this species.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would

have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on California wolverine.

Pacific fisher (*Martes pennanti*)

Direct and Indirect Effects. Fisher habitat in the Merced River Corridor is primarily conifer and mixed conifer forests in Segments 1, 2, 5, and 7 (Merced River above Nevada Fall, Yosemite Valley, South Fork Merced River above Wawona, and Wawona, respectively). Although some suitable habitat for Pacific fisher occurs in Segment 2, this species is highly sensitive to human presence and would not likely utilize habitats in Yosemite Valley. Proposed actions in Segments 1 and 5 are primarily ecological restoration actions, and thus would have a negligible effect on Pacific fishers during implementation and beneficial effect following restoration. Proposed actions in Wawona include removing select campsites and retaining current facilities and services, which would continue to affect wildlife in general. However, there are no proposed actions which would remove suitable fisher habitat (large trees and snags within coniferous or mixed forests).

Proposed actions to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Potential foraging habitat for Pacific fisher may be affected by proposed construction and reorganization activities in the near-term in these areas, including direct loss of ponderosa pine (34.04 acres) habitat. Near-term actions in Segments 1 at the Merced Lake High Sierra Camp would retain the camp, reduce capacity of beds, and replace flush toilets with composting toilets. In Segment 7, near-term actions would remove campsites that are within the 100-year floodplain or in culturally sensitive areas at the Wawona Campground area. All of these actions would occur near currently developed areas that receive relatively high levels of human disturbance. Because, this species is sensitive to human presence, it is therefore not likely to occur in potentially affected areas Thus, these actions would not likely result in any direct or indirect effects to the Pacific fisher.

Cumulative Effects. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service) could provide benefits to the fisher.

The Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan and Parkwide Communication Data Network, projects may have an adverse effect on fisher habitat.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Pacific fisher.

Whitebark pine (*Pinus albicaulis*)

Direct and Indirect Effects. Whitebark pine is generally found in high-elevation upper montane and subalpine forests in Segments 1 (Merced River above Nevada Fall) and 5 (South Fork Merced River above Wawona). The proposed actions in Segments 1 and 5 are primarily ecological restoration actions in meadows and wetlands that generally do not require the removal of conifers, and thus would result in no adverse effects to the whitebark pine. Meadow and wetland restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow and wetland habitat in Segments 1 and 5 would result in no beneficial or adverse effects to the whitebark pine as these activities generally occur outside of whitebark pine habitat (forests).

Overall, no adverse or beneficial effect on whitebark pine is expected as a result of the implementation of the Preferred Alternative.

Actions at the Merced Lake High Sierra Camp in Segment 1 would retain the camp, reduce capacity of beds, and replace flush toilets with composting toilets. It is unlikely that proposed actions in Segment 1 would affect whitebark pine because the actions would occur outside the elevation range for whitebark pine.

Cumulative Effects. Whitebark pine is rapidly declining throughout most of its range, and recent monitoring and research results suggest that whitebark pine mortality may be increasing in California due to mountain pine beetle outbreaks (Gibson et al. 2008). Other factors that contribute to whitebark pine decline include white pine blister rust from a fungal pathogen, fire suppression, and climate change (by predisposing trees to insect and pathogen attacks and enabling white pine blister rust to expand to higher elevations) (Millar et al. 2012)

Projects that have an appreciable effect on high-elevation forest habitats are most likely to affect the whitebark pine. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), and Tuolumne Wild and Scenic River Comprehensive Management Plan could improve habitat conditions for whitebark pine. Particularly, fire management designed to remove late-successional trees and favor whitebark pine may reduce competition from other conifer species for suitable openings for seed germination. These actions could have long-term, beneficial effects on whitebark pine, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the whitebark pine include the Parkwide Communication Data Network and Tioga Road Rehabilitation.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on whitebark pine.

California State Endangered Species

Wildlife

Bald eagle (*Haliaeetus leucocephalus*)

Direct and Indirect Effects. Bald eagles are rarely seen within Yosemite and are not known to nest in the park. However, riparian and meadow areas of Yosemite Valley, El Portal, and Wawona may provide foraging habitat for transient eagles. Actions proposed in this plan, such as the restoration of meadow and riparian habitat, would increase the size, integrity, and connectivity of potential habitat for this species. This would have a beneficial impact on potential foraging habitat for the bald eagle. Upland habitats are not the primary habitats used by the bald eagle, and the size of the proposed new developments in Yosemite Valley, El Portal, and Wawona, are relatively small in relation to the range of the bald eagle. Therefore, development and fragmentation in upland habitats would have negligible effects on this species. There would be a relatively large amount of restoration of meadow and riparian habitat in relation to development in upland habitats; therefore, the Preferred Alternative would have an overall long-term, beneficial effect on the bald eagle.

Proposed actions to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. In Segment 7, actions would remove campsites that are within the 100-year floodplain or in culturally sensitive areas at the Wawona Campground area. The facility actions in Segments 2 and 7 would not likely directly or indirectly affect the bald eagle because this species is a rare visitor to the park. Preconstruction surveys would be conducted to ensure no active raptor nest sites are affected by the proposed actions.

Cumulative Effects. Regional and parkwide planning efforts such as the Yosemite Vegetation Management Plan, Invasive Plant Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, Fire Management Plan could improve the size, integrity, and connectivity of suitable habitat for the bald eagle.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on bald eagle.

Great gray owl (*Strix nebulosa*)

Direct and Indirect Effects. In the Sierra Nevada, great gray owls nest in mature red fir, mixed conifer, or lodgepole pine forests near wet meadows or other vegetated openings. Suitable great gray owl habitat occurs in forested areas near meadows within Yosemite Valley and Wawona (Segments 2 and 7, respectively). Although some suitable habitat for great gray owl occurs in Segment 2, this species is highly sensitive to human presence and would not likely utilize habitats in Yosemite Valley.

Overall, the Preferred Alternative would result in beneficial effects to great gray owl and their habitat as a result of a substantial amount of restored high-quality habitat in Yosemite Valley and Wawona.

Cumulative Effects. Projects that have an appreciable effect on mid-elevation forest and meadow habitats are most likely to affect the great gray owl. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and nesting habitat for the great gray owl. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the great gray owl include those that affect forest and meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements. The 2009 Fire Management Plan and Fuels reductions/forest rehabilitation projects (U.S. Forest Service) may affect great gray owls during plan implementation.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on great gray owl.

Willow flycatcher (*Empidonax traillii*)

Direct and Indirect Effects. Habitat loss and alteration is likely the greatest cause of willow flycatcher's decline in the west (NatureServe 2009). Within the Sierra Nevada, habitat degradation due to historic and/or ongoing grazing of riparian and meadow habitats appears to be associated with population declines (Siegel et al. 2008). Other threats such as climate change, altered fire regimes, and invasive species can also lead to habitat degradation indirectly. Willow flycatchers are particularly vulnerable to brood parasitism by brown-headed cowbirds (*Molothrus ater*). Willow flycatchers are at greater risk of cowbird brood parasitism where pack stations, corrals, supplemental feed, livestock holding facilities, livestock herds, campgrounds, picnic areas, rural communities or other brown-headed cowbird-associated locations occur within at least 8 km of occupied willow flycatcher sites (Rothstein et al. 1980, Verner and Rothstein 1988). Brownheaded cowbirds are frequently observed in Yosemite taking advantage of unnatural food sources at pack stations, stables, campgrounds, and in park residential areas.

Willow flycatchers have not been observed in Yosemite Valley for over 30 years, and are seen on rare occasions elsewhere in the park. The species is typically found in meadows with a lush growth of willow shrubs. Riparian and meadow restoration within Yosemite Valley and Wawona would increase

the size, integrity, and connectivity of potential habitat for this species and increase the chances for its recolonization.

Proposed actions to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. In Segment 7, actions would remove campsites that are within the 100-year floodplain or in culturally sensitive areas at the Wawona Campground area. The facility actions in Segments 2 and 7 would not likely directly or indirectly affect the willow flycatcher because this species rarely occurs in Yosemite Valley and elsewhere in the park.

Overall, these actions would result in a beneficial effect on the willow flycatcher due to the large amount of suitable habitat that would be restored in Yosemite Valley and Wawona.

Cumulative Effects. Projects that would cause degradation of meadow habitat or increased abundance of brown-headed cowbirds would adversely affect willow flycatchers through respective habitat loss and nest parasitism.

Regional and parkwide planning efforts such as the Yosemite Vegetation Management Plan, Invasive Plant Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, Fire Management Plan could improve the size, integrity, and connectivity of suitable habitat for the willow flycatcher. Implementation of these plans could help restore habitats, control the effects of grazing, and reduce cowbird abundance by reducing fragmentation of forest communities.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on willow flycatcher.

Sierra Nevada bighorn sheep (*Ovis Canadensis sierra*)

Refer to the Federal Endangered Species section, above.

California State Threatened Species

Wildlife

California wolverine (*Gulo gulo luteus*)

Refer to the Federal Candidate Species section, above.

Sierra Nevada red fox (*Vulpes vulpes necator*)

Direct and Indirect Effects. Expansion of non-native lowland red foxes or coyotes into high elevation areas may result in increased competition and potential transmission of harmful diseases and parasites to Sierra Nevada red foxes (Perrine et al. 2010). Interbreeding with non-native red foxes may reduce genetic adaptation to local conditions (Perrine et al. 2010) and damage genetic integrity of the native subspecies. Development and recreation, resulting in increased exposure to humans, vehicles and pets, and possibly facilitating dispersal of non-native red foxes, coyotes and other competitors are additional threats (Perrine et al. 2010). Habituation and begging habits may increase risk of mortality at roads and campgrounds, while fish poisoning disease may result from stocking infected fish for recreational fisheries (Perrine et al. 2010). Diseases from domestic animals, including rabies and distemper, and parasites, such as trematodes, can also cause significant mortality in red fox populations (Perrine et al. 2010). Rodenticides used for vegetation or livestock management purposes may result in secondary poisoning (Perrine et al. 2010). Climate change may reduce or change important habitat features in their boreal environment, such as reduced snowfall (Perrine et al. 2010).

The Merced River corridor supports Sierra Nevada red fox habitat in Segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona). Proposed actions in Segments 1 and 5 are primarily ecological restoration actions, and thus would have negligible, direct and indirect effects on Sierra Nevada red fox during construction and beneficial effect following restoration.

Facility-related actions at the Merced Lake High Sierra Camp in Segment 1 would include reducing capacity of beds and replacing flush toilets with composting toilets. These actions would result in negligible effects on the Sierra Nevada red fox.

Cumulative Effects. Regional and parkwide planning efforts such as the Yosemite Vegetation Management Plan, Invasive Plant Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, Fire Management Plan could improve the size, integrity, and connectivity of suitable habitat for red foxes. These actions could have long-term, beneficial effects on suitable habitat, depending upon the alternatives chosen for implementation and the extent of their implementation over time.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Sierra Nevada red fox.

Golden eagle (*Aquila chrysaetos*)

Direct and Indirect Effects. The greatest outside threat to golden eagle populations stems from interactions with humans and human-built structures (Steel et al. 2011). In particular, collisions with structures and electrocution by power lines cause the majority of non-natural Golden Eagle deaths (Steel et al. 2011). Such interactions could have detrimental effects to golden eagle populations in

Yosemite. Overall, the relatively intact habitats in Yosemite are beneficial to golden eagles, and recent large fires in the park have likely expanded the area of suitable foraging habitat by providing more open terrain.

Although golden eagles have been seen over most of the park, the areas of potential development under the Preferred Alternative that contain the most suitable habitat include Yosemite Valley and El Portal. The following are assessments of potential effects to golden eagles in these locations:

> ***Yosemite Valle***y – Restoration of meadow and riparian habitats would improve habitat quality for golden eagles under the Preferred Alternative. Even with this restoration, however, the terrain of Yosemite Valley would be marginal habitat for golden eagles, compared to other areas in the park (e.g., Merced River canyon). Effects in Yosemite Valley would be beneficial.
>
> ***El Portal*** – Development of housing, parking, and operations in this location would primarily affect wooded areas near the bottom of the Merced River canyon, which is not preferred golden eagle habitat. Most development would occur in or adjacent to areas with existing or previous development. These factors, coupled with the abundance of golden eagle habitat at higher elevations in the canyon, indicate that the impact on golden eagles under this alternative would be negligible.

Proposed actions to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Proposed actions would not occur in golden eagle preferred habitat (open terrain and early successional forest and shrub habitats; large trees in open habitats or canyons) and thus would not likely affect golden eagles. Additionally, trees that would potentially serve as suitable golden eagle nesting habitat are generally located near developed sites. Thus, it is not anticipated that golden eagle nest sites would occur in proximity to areas with near-term actions. Preconstruction surveys would be conducted to ensure no active nest sites are affected by the proposed actions. Overall, effects of the Preferred Alternative on golden eagles would be beneficial, due primarily to restoration of habitats in Yosemite Valley.

Cumulative Effects. Regional and parkwide planning efforts such as the Yosemite Vegetation Management Plan, Invasive Plant Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, Fire Management Plan could improve the size, integrity, and connectivity of suitable habitat for golden eagles. These regional plans would have a long-term beneficial effect on golden eagles.

Foreseeable facility development projects that could have an adverse effect on golden eagles include the Crane Flat Utilities, East Yosemite Valley Utilities Improvement Plan, and Wahhoga Indian Cultural Center. These projects, in total, would have a minor, adverse effect on golden eagles, because of the limited area they would affect.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on golden eagle.

American peregrine falcon (*Falco peregrinus anatum*)

Direct and Indirect Effects. Enough high-quality habitat exists in the river corridor to sustain a healthy population of peregrine falcons; primary threats to them include predation on young by golden eagles and great horned owls and competition with ravens for nest sites. Other threats include disturbances posed by helicopters during search and rescue flights or medical evacuations and conflicts between nesting falcons and rock climbers.

The Merced River corridor supports peregrine falcon habitat in Segments 1, 2, 3, 5, and 7. Proposed actions in Segments 1, 3 and 5 are primarily ecological restoration actions, and thus would have a negligible, direct and indirect effect on peregrine falcon during implementation and a beneficial effect following restoration.

Restoration of meadow and riparian habitats in Yosemite Valley would have a beneficial impact on potential foraging habitat for the peregrine falcon. Development in Yosemite Valley associated with the preferred alternative could have a short-term adverse impact during periods of construction. Construction would not take place when the peregrine falcon is nesting or foraging in the vicinity of Cathedral Rocks. Development in forested habitats in Yosemite Valley and Wawona would have a negligible effect on peregrine falcons because this habitat type is abundant in these locations, and the falcon prefers to hunt in open areas such as along cliff faces and over meadows and water.

Proposed actions at the Merced Lake High Sierra Camp in Segment 1 would retain the camp, reduce capacity of beds, and replace flush toilets with composting toilets. Proposed actions in to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. In Segment 7, actions would remove campsites that are within the 100-year floodplain or in culturally sensitive areas at the Wawona Campground area. All of these actions would occur near currently developed areas that receive relatively high levels of human disturbance.

The proposed actions in Segment 2 and 7 would not occur in suitable nesting habitat for peregrine falcons. However, construction-related noise and human presence may cause peregrine falcons to temporarily avoid certain areas for foraging, such as wet meadow and woodland habitats. Actions in Segment 1 are not likely to affect peregrine falcon as these actions would occur outside of peregrine falcon nesting and foraging habitat. Overall, effects of the Preferred Alternative on peregrine falcons would be beneficial, due primarily to restoration of habitats in Yosemite Valley.

Cumulative Effects. Regional and parkwide planning efforts such as the Yosemite Vegetation Management Plan, Invasive Plant Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, Fire Management Plan could improve the size, integrity, and connectivity of suitable habitat for peregrine falcons. These actions could have long-term, beneficial effects on suitable habitat, depending upon the alternatives chosen for implementation and the extent of their implementation over time.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and

spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on peregrine falcon.

Bald eagle (*Haliaeetus leucocephalus*)

Refer to the California State Endangered Species section, above.

California State Rare Species

Plants

Thompkins' sedge (*Carex tompkinsii*)

Direct and Indirect Effects. Habitat for Thompkins' sedge occurs in Segment 4 (El Portal). There would be no direct effects on Thompkins' sedge as a result of the Preferred Alternative. Continued and increased use of the El Portal area could result in indirect adverse effects to this species as a result of increased population and associated foot traffic. Non-native species could be introduced and become established in newly developed areas and spread into Thompkins' sedge habitat. These indirect effects would have a long-term adverse impact on the species.

Cumulative Effects. The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Thompkins' sedge.

Congdon's woolly-sunflower (*Eriophyllum congdonii*)

Direct and Indirect Effects. Habitat for Congdon's woolly-sunflower occurs in Segment 4 (El Portal). There would be no direct effects on Congdon's woolly-sunflower as a result of the Preferred Alternative. Continued and increased use of the El Portal area could result in indirect adverse effects to this species as a result of increased population and associated foot traffic. Non-native species could be introduced and become established in newly developed areas and spread into Congdon's woolly-sunflower habitat. These indirect effects would have a long-term adverse impact on the species.

Cumulative Effects. The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under

Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Congdon's woolly sunflower.

Congdon's lewisia (*Lewisia congdonii*)

Direct and Indirect Effects. This species is known from the lower portion of the South Fork of the Merced River, El Portal, and through the lower portions of the Merced River gorge. Continued and increased use of the El Portal and Wawona areas could result in indirect adverse effects to this species through introduction and establishment of non-native species that could out-compete Congdon's lewisia, and through additional foot traffic that could result from an increased residential population. Most Congdon's lewisia plants are found in relatively inaccessible areas that have steep slopes and poison oak. These indirect effects would have a long-term adverse impact on the species.

Cumulative Effects. The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Congdon's lewisia.

California State Species of Special Concern

Wildlife

Hardhead (*Mylopharodon conocephalus*)

Direct and Indirect Effects. In the Sierra Nevada, hardhead is a native fish that inhabit the lower reaches of the Merced River up to the vicinity of El Portal. It requires undisturbed areas of larger middle- and low-elevation streams that support clear, deep pools with sand-gravel-boulder substrates and slow water velocities. Suitable habitat for the hardhead is found in Segments 4, 6, and 7 of the Merced River corridor (El Portal, South Fork Merced River Impoundment, and Wawona, respectively).

The Preferred Alternative in the *Merced River Plan/DEIS* does not propose any actions that would result in adverse or beneficial effects to the hardhead in Segment 6 (the Impoundment area).

Actions that would potentially result in adverse effects to the hardhead and its habitat include construction of new park facilities and infrastructure (e.g., parking lots and high density employee housing) in Segments 4 and 7. These actions would have a negligible adverse impact because of the limited area that would be involved, the existing human disturbance in the area, and construction outside of suitable habitat for the hardhead (i.e., the Merced River and adjacent riparian habitat within the 100-year floodplain). Additionally, the Preferred Alternative would also restore significant

amounts of riparian habitat in Segments 4 and 7. These restorative actions would have long-term beneficial effects on hardhead due to increased productivity of the river ecosystem and enhanced water quality of the Merced River.

Cumulative Effects. Projects that have an appreciable effect on montane riparian and riverine habitats are most likely to affect the hardhead. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could increase the productivity of the Merced River, enhance river complexity, and maintain good water quality. These actions could have long-term beneficial effects on suitable habitat for the hardhead, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the hardhead include the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on hardhead.

Northern goshawk (*Accipiter gentilis*)

Direct and Indirect Effects. The northern goshawk breeds in most mountain areas, where they generally remain through the winter. Their preferred habitat is moderately dense coniferous forests broken by meadows and other openings, between 5,000 and 9,000 feet elevation. Segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona, respectively) support this species.

The Preferred Alternative would restore meadows within Segments 1 and 5 and would result in negligible adverse effects to the northern goshawk during restoration. Meadow restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in long-term beneficial effects on the northern goshawk as foraging habitat within meadows would improve over time.

Proposed actions at the Merced Lake High Sierra Camp in Segment 1 would retain the camp, reduce capacity of beds, and replace flush toilets with composting toilets. These actions would result in a negligible beneficial impact on northern goshawk in Segment 1by reducing stresses from visitor use.

Cumulative Effects. Projects that have an appreciable effect on high-elevation forest and meadow habitats are most likely to affect the northern goshawk. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit

Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable habitat for the northern goshawk. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the northern goshawk include those that affect forest and meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements. The 2009 Fire Management Plan and Fuels reductions/forest rehabilitation projects (U.S. Forest Service) could temporarily affect northern goshawks during plan implementation.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on northern goshawk.

Long-eared owl (*Asio otus*)

Direct and Indirect Effects. Given the rarity of observations in Yosemite Valley, and the age of the last confirmed nesting there, it is possible that increasing human disturbance has affected use of Valley habitats by long-eared owls, especially in meadow and riparian habitats. Long-eared owl habitat is largely intact in the park, except for localized habitat destruction from roads and development. Suitable habitat for the long-eared owl is found in most segments of the Merced River corridor (Segments 2, 3, 4, 6, 7, and 8) west of Nevada Fall and the impoundment area.

The proposed actions within segments 3, 6, and 8 under the Preferred Alternative primarily involve ecological restoration or maintaining current types of uses. Thus, impacts to the long-eared owl as a result of these actions would be long-term, local, and beneficial. Additionally, the Preferred Alternative would also restore montane riparian, wet meadow, oak woodland, and aquatic habitats in Segments 2, 4, and 7. These restorative actions would have long-term, beneficial effects on long-eared owls.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have adverse effects on potential long-eared owl habitat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, parking lots, and high density employee housing) in Segments 2, 4 and 7. Long-eared owl habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Camp 6 Yosemite Village, and Yosemite Lodge and Camp 4; and by removal of campsites that are within the 100-year floodplain or in culturally sensitive areas at the Wawona Campground in Segment 7. Construction activities in Segment 2 could indirectly affect long-eared owl due to disturbance associated with

removal, restoration, and construction of new facilities. Potential foraging habitat for long-eared owl in Segment 2 would be affected, including direct loss of ponderosa pine (34.04 acres), montane riparian (0.81 acres), and montane hardwood (1.73 acres) habitat. Tree removal associated with the construction of new facilities in Segment 2 would remove potential suitable roosts or perches for owls. However, the location of trees planned for removal are in proximity to existing developed sites, and thus would not likely serve as nest sites for long-eared owls. Heavy construction equipment and an increase in human presence in Segments 2 and 7 would temporarily cause long-eared owls to relocate or avoid the area for foraging. Pre-construction surveys for long-eared owl nests would be conducted prior to the implementation of proposed actions in Segments 2 and 7 to ensure that no active owl nest sites could be affected. Additionally, older trees and snags would be retained in Segment 2 for long-eared owl habitat where possible. In summary, proposed actions related to managing visitor use and facilities in Segments 2, 4 and 7 would have adverse effects on long-eared owls as a result of construction-related disturbances to foraging habitat.

Overall, there would be a long-term beneficial impact on the long-eared owl as a result of a substantial amount of restored high-quality habitat in Yosemite Valley, El Portal, and Wawona areas.

Cumulative Effects. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service) could provide benefits to the long-eared owl.

The Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan and Parkwide Communication Data Network projects may have an adverse effect on long-eared owl habitat.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on long eared owl.

Vaux's swift (*Chaetura vauxi*)

Direct and Indirect Effects. Vaux's swift habitat occurs in forested areas near meadows within Yosemite Valley and Wawona (Segments 2 and 7, respectively). It inhabits redwood and Douglas-fir habitats and utilizes large hollow trees and snags, and prefers tall, burned-out stubs as nest sites. Vaux's swifts forage in a variety of habitats, especially over water, including riparian habitats. The Preferred Alternative would restore a variety of habitats, including those used by Vaux's swift such as montane riparian and coniferous forest, in Segments 2 and 7. These restorative actions would have long-term, beneficial effects on Vaux's swift.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have adverse effects on potential Vaux's swift habitat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in Segment 2

(Yosemite Valley). Vaux's swift habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Camp 6Yosemite Village, including construction and restoration activities associated with formalizing parking lots, moving parking lots away from riparian areas, construction of new parking spaces, and construction of a pedestrian underpass and a roundabout. Indirect effects to Vaux's swift would result from disturbance associated with construction activities. Potential foraging habitat for Vaux's swift would be affected, including direct loss of montane riparian habitat (0.81 acres). Habitat and tree removal associated with the construction of new facilities would remove potential suitable perches for swifts. However, the location of trees planned for removal is typically located in proximity to existing developed sites that receive relatively high levels of human disturbance. Heavy construction equipment and an increase in human presence would temporarily cause Vaux's swifts to relocate or avoid the area for foraging. Pre-construction surveys for Vaux's swift nests would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no active nest sites could be affected. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have long-term, adverse effects on Vaux's swifts as a result of construction-related disturbances to foraging habitat. Overall, there would be a long-term beneficial impact on the Vaux's swift as a result of a substantial amount of restored high-quality habitat in Yosemite Valley and Wawona.

Cumulative Effects. Projects that have an appreciable effect on mid-elevation forest and meadow habitats are most likely to affect the Vaux's swift. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the Vaux's swift. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the Vaux's swift include those that affect forest, meadow, and aquatic habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements. The 2009 Fire Management Plan and Fuels reductions/forest rehabilitation projects (U.S. Forest Service) may affect Vaux's swift during plan implementation.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Vaux's swift.

Northern harrier (*Circus cyaneus*)

Direct and Indirect Effects. Northern harrier habitat occurs in open grassland, meadows, and wetlands within segments 2 and 7 (Yosemite Valley and Wawona, respectively). The Preferred

Alternative would restore large areas of habitat suitable for northern harrier, including wet meadows in Yosemite Valley and Wawona. These restorative actions would have beneficial effects on northern harrier as foraging and nesting habitat for this species would improve (in size, integrity, and continuity) over time.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have adverse effects on potential northern harrier habitat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in Segments 2 and 7 (Yosemite Valley and Wawona, respectively). The proposed actions in Segment 2 and 7 would not occur in suitable nesting habitat for northern harrier. However, construction-related noise and human presence may cause northern harriers to temporarily avoid certain areas for foraging, causing negligible adverse impacts on this species.

Overall, there would be a long-term beneficial impact on the northern harrier as a result of a substantial amount of restored high-quality habitat in Yosemite Valley and Wawona.

Cumulative Effects. Projects that have an appreciable effect on meadow and grassland habitats are most likely to affect the northern harrier. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the northern harrier. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the northern harrier include those that affect meadows, wetlands, and grassland habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on northern harrier.

Olive-sided flycatcher (*Contopus cooperi*)

Direct and Indirect Effects. Olive-sided flycatcher habitat occurs in forest and woodland habitats below 9,000 feet. It prefers mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats for nesting. Olive-sided flycatchers prefer unobstructed airspace within openings and over forest canopies with exposed perches for foraging. Suitable habitat for this species occurs in Segments 1, 2, 5, and 7 (Merced River above Nevada Fall, Yosemite Valley, South Fork Merced River above Wawona, and Wawona, respectively).

The proposed actions in Segments 1 and 5 are primarily ecological restoration actions in meadows and wetlands that would result in negligible adverse effects to the olive-sided flycatcher during construction as these restoration activities occur outside of preferred flycatcher nesting habitat. Meadow and wetland restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in long-term beneficial impacts to foraging habitat for the olive-sided flycatcher.

The Preferred Alternative would restore large areas of suitable foraging habitat for the olive-sided flycatcher in Segments 2 (Yosemite Valley) and 7 (Wawona), including meadows within forest openings. These restorative actions would have beneficial effects on olive-sided flycatcher as foraging habitat for this species would improve (in size, integrity, and continuity) over time.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have adverse effects on potential olive-sided flycatcher habitat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in Segments 2 and 7 (Yosemite Valley and Wawona, respectively).Olive-sided flycatcher foraging habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Yosemite Village Day-use Parking Area, including construction and restoration activities associated with formalizing parking lots, moving parking lots away from riparian areas, construction of new parking spaces, and construction of a pedestrian underpass and a roundabout. Indirect effects to olive-sided flycatcher would result from disturbance associated with construction activities. Potential foraging habitat for olive-sided flycatcher would be affected, including direct loss of montane riparian habitat (0.81 acres). Habitat and tree removal associated with the construction of new facilities would remove potential suitable perches for flycatchers. However, the location of trees planned for removal is typically located in proximity to existing developed sites that receive relatively high levels of human disturbance. Heavy construction equipment and an increase in human presence would temporarily cause olive-sided flycatchers to relocate or avoid the area for foraging. Pre-construction surveys for olive-sided flycatcher nests would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no active nest sites could be affected. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on olive-sided flycatcher as a result of construction-related disturbances to foraging habitat.

Overall, the Preferred Alternative would result in long-term beneficial effects on olive-sided flycatcher as a result of a substantial amount of restored high-quality habitat in Yosemite Valley and Wawona.

Cumulative Effects. Projects that have an appreciable effect on forest, woodland, and meadow habitats are most likely to affect the olive-sided flycatcher. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the olive-sided flycatcher. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the olive-sided flycatcher include those that affect forest, woodland, and open meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on olive-sided flycatcher.

Black swift (*Cypseloides niger*)

Direct and Indirect Effects. Black swift nest sites are located in moist crevices, caves or on cliffs behind or adjacent to waterfalls in deep canyons. The Preferred Alternative would not result in direct or indirect adverse effects on nesting habitat for the black swift. It forages in various habitats. Suitable foraging habitat for this species occurs in Segment 2 (Yosemite Valley).

The Preferred Alternative would restore large areas of suitable foraging habitat for the black swift in Segment 2 (Yosemite Valley), including meadows and riparian habitats. These restorative actions would have beneficial effects on black swift as foraging habitat for this species improves over time (in size, integrity, and continuity).

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects on foraging habitat for black swift include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in Yosemite Valley. These actions would have a negligible adverse impact because of the limited area that would be involved, the existing human disturbance in the area, and the large area of suitable, unaffected habitat that would continue to exist in surrounding areas. Additionally, all actions occur outside of black swift preferred nesting habitat (behind waterfalls).

Overall, the Preferred Alternative would result in long-term beneficial effects on black swift as a result of a substantial amount of restored high-quality habitat in Yosemite Valley.

Cumulative Effects. Projects that have an appreciable effect to meadow, wetlands, and riparian habitats are most likely to affect the black swift as they forage in a variety of habitats. However, most actions would not affect black swift nesting habitat due to their specialized requirements. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the black swift. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the black swift include those that affect meadow, wetlands, and riparian/woodland habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on black swift.

Yellow warbler (*Setophaga petechia*)

Direct and Indirect Effects. The yellow warbler prefers riparian woodlands, but also breeds in chaparral, ponderosa pine, and mixed conifer habitats with substantial amounts of brush. Suitable habitat for the yellow warbler occurs in all segments (Segments 1-8) within the Merced River corridor.

The Preferred Alternative would restore large tracts of previously disturbed meadow, riparian, coniferous and broadleaf forest, and Valley oak woodland habitats, primarily in Yosemite Valley, El Portal, and Wawona, totaling approximately 203 acres of habitat. Removal of campgrounds and park facilities located within 100 feet of the river and restoring these areas would increase the amount, integrity, and contiguity of habitat for this species. This would improve suitable habitat for the yellow warbler. These restorative actions would have beneficial effects on yellow warbler as foraging habitat for this species improves over time (in size, integrity, and continuity).

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to yellow warbler include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, employee housing, and parking lots) in Yosemite Valley, El Portal, and Wawona.

Yellow warbler habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Yosemite Village Day-use Parking Area, including construction and restoration activities associated with formalizing parking lots, moving parking lots away from riparian areas, construction of new parking spaces, and construction of a pedestrian underpass and a roundabout. Indirect effects to yellow warbler would result from disturbance associated with construction activities. Potential foraging habitat for yellow warbler would be affected, including direct loss of montane riparian habitat (0.81 acres). Habitat and tree removal associated with the construction of new facilities would remove potential suitable perches for warblers. However, the location of trees planned for removal is typically located in proximity to existing developed sites that receive relatively high levels of human disturbance. Heavy construction equipment and an increase in human presence would temporarily cause yellow warblers to relocate or avoid the area for foraging. Pre-construction surveys for yellow warbler nests would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no active nest sites could be affected. In summary, proposed actions related to managing

visitor use and facilities in Segment 2 would have adverse effects on yellow warbler as a result of construction-related disturbances to foraging habitat.

The overall, long-term effect on yellow warblers under the Preferred Alternative in the *Merced River Plan/DEIS* would be beneficial, primarily due to the restoration of highly suitable riparian habitat and the prohibition of new development within the 100-year floodplain of the Merced River.

Cumulative Effects. Projects that substantially affect riparian woodland, chaparral, ponderosa pine, and mixed conifer habitats would likely affect the yellow warbler. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and nesting habitat for the yellow warbler. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the yellow warbler include those that affect riparian/woodland and forest habitats, such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Project.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on yellow warbler.

Harlequin duck (*Histrionicus histrionicus*)

Direct and Indirect Effects. Harlequin ducks are very rarely seen in Yosemite, possibly due to human disturbance in riparian areas that provide cover for nest sites and broods. Nests are established near swift rivers or streams in recesses sheltered overhead by stream banks, rocks, woody debris, or low shrubs. Nests are usually within 7 feet of the water, but can be up to 90 feet away. Although they are rare within Yosemite, potential suitable habitat for the harlequin duck occurs in all segments (Segments 1-8) within the Merced River corridor.

The Preferred Alternative would restore large tracts of previously disturbed meadow, riparian, coniferous and broadleaf forest, and Valley oak woodland habitats, primarily in Yosemite Valley, El Portal, and Wawona, totaling approximately 203 acres of habitat. Restoration of riparian habitat would improve and increase the amount of suitable habitat for the harlequin duck. Removal of campgrounds and park facilities located within 100 feet of the river and restoring these areas would increase the amount, integrity, and contiguity of habitat for this species. These restorative actions would have beneficial effects on the harlequin duck as nesting and foraging habitat for this species improves over time (in size, integrity, and continuity).

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to the harlequin duck include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, employee housing, and parking lots) in Yosemite Valley, El Portal, and Wawona. These actions would have a negligible adverse impact because of the limited area that would be involved, the existing human disturbance in the area, and the large area of suitable, unaffected habitat that would continue to exist in surrounding areas. Additionally, proposed new campgrounds and park facilities would be constructed outside of the 100-year floodplain to further avoid impacts to intact riparian habitat.

The overall, long-term effect on the harlequin duck under the Preferred Alternative in the *Merced River Plan/DEIS* would be beneficial, primarily due to the restoration of highly suitable riparian habitat and the prohibition of new development within the 100-year floodplain of the Merced River.

Cumulative Effects. Foreseeable projects that could have beneficial effects on the harlequin duck and its habitat include regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan. These actions could have long-term, beneficial effects on suitable habitat for harlequin duck, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the harlequin duck include those that affect riparian woodland habitat, such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on harlequin duck.

California spotted owl (*Strix occidentalis occidentalis*)

Direct and Indirect Effects. California spotted owl occurs in oak and ponderosa pine forests to lower elevation red fir forests up to 7,600 feet in elevation; preferred elevation is ranges between 3,000 and 7,000 feet. Tree cavities, broken-off trees and snags, abandoned nests of other species, or mistletoe clumps are used as nesting sites. California spotted owl requires dense forest, with a canopy closure of greater than 70%. The presence of black oak in the canopy also enhances habitat quality. In the Merced River corridor, suitable spotted owl habitat occurs in mature and old forests with dense canopies in segments 1, 2, 5, and 7 (Merced River above Nevada Fall, Yosemite Valley, South Fork Merced River above Wawona, and Wawona, respectively).

The Preferred Alternative in the *Merced River Plan/DEIS* would restore meadows within Segments 1 and 5, which would result in no effects to the spotted owl as these activities are not conducted within preferred spotted owl habitat. The Preferred Alternative would restore large areas of habitat in Segments 2 (Yosemite Valley) and 7 (Wawona). These restorative actions would have beneficial effects on the spotted owl by potentially increasing the quality and extent of suitable foraging habitat.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that may result in adverse effects to spotted owl habitat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in forest habitats within Segments 2 and 7 (Yosemite Valley and Wawona). California spotted owl habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect long-eared owl due to disturbance associated with construction activities. Potential habitat for spotted owl would be affected, including direct loss of ponderosa pine (34.04 acres) and montane hardwood (1.73 acres) habitat. Tree removal associated with the construction of new facilities would remove potential suitable roosts or perches for owls. However, the location of trees planned for removal are in proximity to existing developed sites that receive relatively high levels of human disturbance, and thus would not likely serve as nest sites for spotted owls. Heavy construction equipment and an increase in human presence would temporarily cause spotted owls to relocate or avoid the area for foraging. Pre-construction surveys for spotted owl nests would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no active owl nest sites could be affected. Additionally, older trees and snags would be retained for spotted owl habitat where possible. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have long-term, adverse effects on spotted owls as a result of construction-related disturbances to foraging and nesting habitat.

Overall, the Preferred Alternative would result in long-term beneficial effects to California spotted owl and their habitat as a result of a substantial amount of restored high-quality habitat in Yosemite Valley and Wawona.

Cumulative Effects. Projects that have an appreciable effect on intermediate to late successional forests with dense canopy closure are most likely to affect the California spotted owl. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), and Tuolumne Wild and Scenic River Comprehensive Management Plan, could improve the size, integrity, and connectivity of suitable foraging and nesting habitat for the spotted owl. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the California spotted owl include those that affect forest habitats, such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Projects. The 2009 Fire Management Plan and Fuels reductions/forest rehabilitation projects (U.S. Forest Service) may affect spotted owls during plan implementation.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on California spotted owl.

Pallid bat (*Antrozous pallidus*)

Direct and Indirect Effects. Pallid bats occurs in a variety of habitats including oak woodlands, coniferous forests, riparian woodland, and meadows. This species is quite versatile in its choice of roosting sites and has been documented using tree hollows, rock crevices, caves, abandoned mines, and structures. Suitable habitat for this species occurs in all segments (Segments 1-8) within the Merced River corridor.

The Preferred Alternative would restore approximately 203 acres of previously disturbed meadow, riparian, wetland, coniferous and broadleaf forest, and Valley oak woodland habitat, primarily in Segments 2, 4, and 7. Minor restoration actions would also occur in Segments 1 and 5. These restorative actions would have long-term, beneficial effects on the pallid bat by improving foraging habitat for this species.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to the pallid bat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, employee housing, and parking lots) in Yosemite Valley, El Portal, and Wawona. Pallid bat habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect pallid bat due to disturbance associated with construction activities. Potential foraging and roosting habitat for pallid bat would be affected, including direct loss of ponderosa pine (34.04 acres), montane hardwood (1.73 acres), montane riparian (0.81 acres), and wet meadow (0.31 acres) habitat. Removal of mature trees with cavities or structures associated with the construction of new facilities would remove potential suitable roosting habitat for pallid bats. Heavy construction equipment and an increase in human presence would temporarily cause pallid bats to relocate or avoid the area for foraging. Pre-construction surveys for pallid bat roosting colonies would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no colony sites could be affected. Additionally, older trees and snags would be retained for pallid bat habitat where possible. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on pallid bats as a result of construction-related disturbances to foraging and roosting habitat.

Overall, the Preferred Alternative would result in long-term beneficial impacts on the pallid bat from actions to restore large areas of potential bat foraging habitat in Segments 2, 4, and 7, and to protect bat roosting habitat (trees) within the Merced River floodplain by restricting new development.

Cumulative Effects. Projects that substantially affect riparian woodland, ponderosa pine, and mixed conifer habitats would likely affect the pallid bat. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and roosting habitat for the pallid bat. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the pallid bat include those that affect riparian/woodland and forest habitats, such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Project.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on pallid bat.

Sierra Nevada mountain beaver (*Aplodontia rufa californica*)

Direct and Indirect Effects. Mountain beavers occur in moist meadows and riparian zones near small perennial streams and creeks within the montane zone and require abundant riparian plants for harvesting. Potential suitable habitat for this species occurs in segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona). Proposed actions in Segments 1 and 5 are primarily ecological restoration actions, and thus would have negligible, direct and indirect effects on Sierra Nevada red fox during construction and beneficial effect following restoration.

Cumulative Effects. Projects that substantially affect high elevation riparian woodland and meadow habitats would likely affect the mountain beaver. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and breeding habitat for the mountain beaver. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the mountain beaver include those that affect riparian/woodland and wet meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Sierra Nevada mountain beaver.

Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)

Direct and Indirect Effects. Previous mist-net surveys indicate that the Townsend's big-eared bat occurred in several locations within and adjacent to the Merced River corridor, namely in Yosemite Valley (Mirror Lake), Wawona (near the South Fork of the Merced River), and El Portal (in a barium mine on U.S. Forest Service land). It requires caves, mines, or buildings for roosting and mesic habitats with brush or trees along habitat edges for foraging. Potential suitable habitat for this species occurs in Segments 2, 3, 4, 7, and 8.

The Preferred Alternative would restore approximately 203 acres of previously disturbed meadow, riparian, wetland, coniferous and broadleaf forest, and Valley oak woodland habitats, primarily within Segments 2, 4, and 7. These restorative actions would have long-term, beneficial effects on Townsend's big-eared bat by improving foraging habitat for this species. The proposed actions within segments 3 and 8 under the Preferred Alternative primarily involve ecological restoration or maintaining current types of uses. Thus, impacts to the Townsend's big-eared bat as a result of these actions would be negligible, long-term, local, and beneficial.

Under the Preferred Alternative, actions that would potentially result in adverse effects to the Townsend's big-eared bat and its habitat include removal of select park facilities and construction of new park facilities and infrastructure (e.g., roundabouts, pedestrian under-crossing, parking lots and high density employee housing) in Segments 2, 4 and 7. Townsend's big-eared bat habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect Townsend's big-eared bat due to disturbance associated with construction activities (removal, restoration, and construction of new facilities). Potential foraging and roosting habitat for Townsend's big-eared bat would be affected, including direct loss of ponderosa pine (34.04 acres), montane hardwood (1.73 acres), montane riparian (0.81 acres), and wet meadow (0.31 acres) habitat. Removal of mature trees with cavities or structures associated with the construction of new facilities would remove potential suitable roosting habitat for Townsend's big-eared bats. Heavy construction equipment and an increase in human presence would temporarily cause bats to relocate or avoid the area for foraging. Pre-construction surveys for Townsend's big-eared bat roosting colonies would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no colony sites could be affected. Additionally, older trees and snags would be retained for Townsend's big-eared bat habitat where possible. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on Townsend's big-eared bats as a result of construction-related disturbances to foraging and roosting habitat.

Overall, the Preferred Alternative would result in long-term beneficial impacts on Townsend's big-eared bat from actions to restore large areas of potential bat foraging habitat in Segments 2, 4, and 7, and to protect bat roosting habitat (trees) within the Merced River floodplain by restricting new development.

Cumulative Effects. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service) could provide benefits to the Townsend's big-eared bat.

Foreseeable projects that could have adverse effects on suitable habitat for Townsend's big-eared bats include the Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan and Parkwide Communication Data Network Project.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Townsend's big-eared bat.

Spotted Bat (*Euderma maculatum*)

Direct and Indirect Effects. There is a significant population of spotted bats in Yosemite Valley that uses meadow and wetland habitats exclusively (as indicated by acoustic data/auditory surveys). It is also present in Wawona. Preferred roosting habitat include high cliff faces, likely on Half Dome and El Capitan. Foraging habitat is primarily meadows and forest edges, or in open coniferous woodland. Suitable habitat for this species occurs in segments 1, 2, 5, and 7 (Merced River above Nevada Fall, Yosemite Valley, South Fork Merced River above Wawona, and Wawona, respectively).

The Preferred Alternative would restore significant amounts of meadow, wetland, coniferous and broadleaf forest, and riparian habitats in Segments 1, 2, 5 and 7. These restorative actions would have long-term, beneficial effects on the spotted bat by improving foraging habitat and enhancing habitat complexity for this species.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to the spotted bat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) primarily in Yosemite Valley and retaining certain services in Wawona. Spotted bat habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect spotted bat due to disturbance associated with construction activities. Potential foraging habitat for spotted bat would be affected, including direct loss of ponderosa pine (34.04 acres), montane riparian (1.73 acres), and wet meadow (0.31 acres) habitat.

Roosting habitat (cliffs and caves) for spotted bat would not be impacted. Heavy construction equipment and an increase in human presence would temporarily cause bats to avoid the area for foraging. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on spotted bats as a result of construction-related disturbances to foraging and roosting habitat.

Overall, the Preferred Alternative would result in long-term beneficial impacts on the spotted bat from actions to restore large areas of potential bat foraging habitat in Segments 1, 2, 5, and 7, and to protect bat roosting habitat (trees) within the Merced River floodplain by restricting new development.

Cumulative Effects. Projects that substantially affect coniferous woodland and meadow habitats would likely affect the spotted bat. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the spotted bat. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the spotted bat include those that affect coniferous woodland and wet meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on spotted bat.

Western mastiff bat (*Eumops perotis*)

Direct and Indirect Effects. There is a significant population of western mastiff bats in Yosemite Valley, representing the highest population of the western mastiff bat in any localities surveyed in California. It is also present in Wawona. It roosts in rocky cliffs and canyons and forages in a variety of habitats, primarily meadows and coniferous forests. Suitable foraging habitat for the greater western mastiff bat occurs in Segments 1, 2, 5, and 7.

The Preferred Alternative would restore significant amounts of meadow, wetland, coniferous and broadleaf forest, and riparian habitats in Segments 1, 2, 5 and 7. These restorative actions would have long-term, beneficial effects to the western mastiff bat by improving foraging habitat and enhancing habitat complexity for this species.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to the western mastiff bat include construction of new park facilities and infrastructure

(e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) primarily in Yosemite Valley and retaining certain services in Wawona. Western mastiff bat habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect western mastiff bat due to disturbance associated with construction activities. Potential foraging and roosting habitat for western mastiff bat would be affected, including direct loss of ponderosa pine (34.04 acres) and montane hardwood (1.73 acres) habitat. Roosting habitat (rock features) for western mastiff bat would not be impacted. Heavy construction equipment and an increase in human presence would temporarily cause bats to avoid areas for foraging. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on western mastiff bats as a result of construction-related disturbances to foraging habitat.

Overall, the Preferred Alternative would result in long-term beneficial impacts on the western mastiff bat from actions to restore large areas of potential bat foraging habitat in Segments 1, 2, 5, and 7.

Cumulative Effects. Projects that substantially affect coniferous woodland and meadow habitats would likely affect the greater western mastiff bat. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the greater western mastiff bat. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the greater western mastiff bat include those that affect coniferous woodland and wet meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on western mastiff bat.

Western Red Bat (*Lasiurus blossevillii*)

Direct and Indirect Effects. Western red bats are strongly associated with riparian habitats, but they also occur over a wide variety of habitats including grasslands, shrublands, open woodlands and forests. They roost in trees and less often in shrubs often located in edge habitats adjacent to streams, fields, or urban areas. Potential suitable habitat for the western red bat occurs in all segments of the

Merced River corridor, in trees, hedgerows, and forest edges. However, their occurrence is rare within the Sierra Nevada because the majority of western red bats are concentrated at lower elevations.

The Preferred Alternative would restore approximately 203 acres of previously disturbed meadow, riparian, wetland, coniferous and broadleaf forest, and Valley oak woodland habitat, primarily in Segments 2, 4, and 7. Minor restoration actions would also occur in Segments 1 and 5. This would improve suitable habitat for the western red bat. Removal of campgrounds and park facilities located within 100 feet of the river and restoring these areas would increase the amount, integrity, and contiguity of habitat for the western red bat. These restorative actions would have long-term, beneficial effects on western red bat as foraging habitat for this species improves over time (in size, integrity, and continuity).

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to western red bat include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, employee housing, and parking lots) in Yosemite Valley, El Portal, and Wawona. Western red bat habitat would be affected by proposed actions to manage visitor use and facilities in Segment 2 at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. Construction and reorganization activities at these locations could indirectly affect western red bat due to disturbance associated with construction activities. Potential foraging and roosting habitat for western red bat would be affected, including direct loss of ponderosa pine (34.04 acres) and montane riparian (0.81 acres) habitat. Removal of mature trees with cavities associated with the construction of new facilities would remove potential suitable roosting habitat for western red bats. Heavy construction equipment and an increase in human presence would temporarily cause western red bats to relocate or avoid the area for foraging. Pre-construction surveys for Western red bat active roosting sites would be conducted prior to the implementation of proposed actions in Segment 2 to ensure that no active roosting sites could be affected. Additionally, older trees and snags would be retained for western red bat habitat where possible. In summary, proposed actions related to managing visitor use and facilities in Segment 2 would have adverse effects on western red bats as a result of construction-related disturbances to foraging and roosting habitat.

Overall, the Preferred Alternative would result in long-term beneficial impacts on the western red bat from actions to restore large areas of potential bat foraging habitat, primarily in Segments 2, 4, and 7, and to protect bat roosting habitat (trees) within the Merced River floodplain by restricting new development. **Cumulative Effects.** Projects that substantially affect riparian woodland habitat would likely affect the western red bat. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and roosting habitat for the western red bat. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the western red bat include those that affect riparian/woodland and forest habitats, such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Project.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on western red bat.

Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*)

Direct and Indirect Effects. Sierra Nevada snowshoe hares are relatively scarce in Yosemite, since this area is apparently at the southern extreme of their range. It occurs in boreal riparian habitats, within thickets of deciduous trees in riparian and conifer forests. Segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River, respectively) provide suitable habitat for the Sierra Nevada snowshoe hare at high elevations.

The Preferred Alternative would restore meadows and wetlands within Segments 1 and 5, which would result in no adverse or beneficial effects to the Sierra Nevada snowshoe hare as these activities are conducted outside of the preferred foraging and breeding habitat. However, meadow habitats are ecologically linked to adjacent habitats, such as riparian woodland, a suitable habitat for the snowshoe hare. Restoration activities to enhance meadow habitat and improve habitat connectivity would enhance foraging habitat for the snowshoe hare and other wildlife in general.

Overall, effect of the Preferred Alternative on Sierra Nevada snowshoe hare is expected to be negligible, long-term, local and beneficial.

Cumulative Effects. Projects that have an appreciable effect on high-elevation riparian woodland and coniferous forests are most likely to affect the Sierra Nevada snowshoe hare. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable habitat for the snowshoe hare. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the snowshoe hare include those that affect riparian and coniferous forest habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably

foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Sierra Nevada snowshoe hare.

Western white-tailed jackrabbit (*Lepus townsendii townsendii*)

Direct and Indirect Effects. Although habitats for the western white-tailed jackrabbit are relatively intact in Yosemite, reported observations of white-tailed jackrabbits are rare. Important foraging habitat for this species includes open alpine and mountain meadows, and open stands of trees with some brush and an herbaceous understory. Segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona) likely provide suitable habitat for the western white-tailed jackrabbit.

The Preferred Alternative would restore meadows and wetlands within Segments 1 and 5 and would result in negligible adverse effects to the white-tailed jackrabbit during restoration. Overgrazing by livestock has been identified as a principal factor in the decline of jackrabbits. Meadow restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in long-term beneficial impacts to the jackrabbit as foraging habitat within meadows would improve over time.

Cumulative Effects. Projects that have an appreciable effect on mid-elevation forest and meadow habitats are most likely to affect the white-tailed jackrabbit. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging habitat for the jackrabbit. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the jackrabbit include those that affect forest and meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on western white-tailed jackrabbit.

Mount Lyell shrew (*Sorex lyellii*)

Direct and Indirect Effects. The Mount Lyell shrew occurs in wetland and riparian communities and moist habitats near streams, in grass, or under willows. Its limited distribution makes it vulnerable to extirpation. Suitable habitat occurs in wetland communities within segments 1 and 5 (Merced River above Nevada Fall and South Fork Merced River above Wawona, respectively).

The Preferred Alternative would restore meadows and wetlands within Segments 1 and 5 and would result in negligible adverse effects to the Mount Lyell shrew during restoration. However, meadow restoration, cessation of pack stock grazing, and re-routing trails outside of sensitive meadow habitat would result in long-term beneficial impacts to the Mount Lyell shrew as foraging habitat within meadows and wetlands would improve over time.

Cumulative Effects. Projects that have an appreciable effect on high-elevation riparian and meadow habitats are most likely to affect the Mount Lyell shrew. Regional and park-wide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable habitat for the shrew. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the Mount Lyell shrew include those that affect riparian, wetland, and meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Mount Lyell shrew.

American Badger (*Taxidea taxus*)

Direct and Indirect Effects. The American badger occurs in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Suitable habitat for the badger occurs in Wawona (Segment 7).

The Preferred Alternative would restore approximately two acres of riparian habitat in Segment 7. These restorative actions would have long-term, beneficial effects on the badger by improving foraging habitat for this species.

Cumulative Effects. Projects that have significant effects on shrub, forest, and other herbaceous habitats are most likely to affect the American badger. Regional and park-wide planning efforts such

as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable habitat for the American badger. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the American badger include those that affect forest and shrub habitats, such as the Park-wide Communication Data Network, Tioga Road Rehabilitation, and 2009 Fire Management Plan and Fuels reductions/forest rehabilitation projects (U.S. Forest Service).

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on American badger.

Western pond turtle (*Emys marmorata*)

Direct and Indirect Effects. The western pond turtle requires permanent ponds, rivers, streams, and irrigation ditches that typically have rocky or muddy bottoms and are overgrown with vegetation. Basking areas are required by this species and include partially submerged logs, rocks, mats of vegetation, or open mud banks. Park records show sightings of the western pond turtle in Yosemite Valley and El Portal. Suitable habitat for this species occurs in Yosemite Valley, El Portal, and Wawona (Segments 2, 4, and 7, respectively). However, this species is believed to be extirpated from the Merced River corridor in Yosemite National Park.

Overall, the Preferred Alternative in the *Merced River Plan/DEIS* would have a beneficial impact to the western pond turtle from actions to restore large areas of meadow and riparian habitats in Segments 2, 4, and 7, and to further protect riparian and meadow habitat within the Merced River floodplain by restricting new development. These habitats form direct ecological linkages to suitable western turtle habitat (ponds, rivers, streams, and ditches); thus, actions to restore meadow and riparian habitats would result in beneficial, long-term effects to the western pond turtle.

Cumulative Effects. Projects that substantially affect riparian woodland, meadow, and other aquatic habitats would likely affect the western pond turtle. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the integrity and connectivity of suitable foraging and basking habitat for the western pond turtle. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the western pond turtle include those that affect riparian, wet meadow, and aquatic habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on western pond-turtle.

Mount Lyell salamander (*Hydromantes platycephalus*)

Direct and Indirect Effects. Mount Lyell salamander occurs in wet habitats above 4,000 feet. It requires rock fissures or similar crevices for shelter, seeps from streams or melting snow, shade, and low-growing vegetation. Records indicate this species occur in Yosemite Valley in the vicinity of Vernal Fall and Curry Village, at the top of Vernal Fall, near the top of Half Dome, and various parts of Lyell Canyon. Suitable habitat for the Mount Lyell salamander occurs in Segments 1, 2, and 5.

The Preferred Alternative would restore significant amounts of meadow, wetland, and riparian habitats throughout Yosemite Valley. Minor meadow and wetland restoration actions would also occur in Segments 1 and 5. These restorative actions may result in negligible, direct and indirect effects on o the Mount Lyell salamander during restoration; however, in the long-term, these actions would result in beneficial effects to the salamander by improving foraging and breeding habitat for this species.

Under the Preferred Alternative in the *Merced River Plan/DEIS*, actions that would have potential adverse effects to the Mount Lyell salamander include construction of new park facilities and infrastructure (e.g., campgrounds, roundabouts, pedestrian under-crossing, and parking lots) in Yosemite Valley. These actions would have negligible adverse impacts because of the limited amount of habitat impacted, the existing human disturbance in the area, and the large area of suitable, unaffected habitat that would continue to exist in surrounding areas. Additionally, proposed new campgrounds and park facilities would be constructed outside wetlands, meadows, and riparian woodland habitat.

Overall, the Preferred Alternative in the *Merced River Plan/DEIS* would have a beneficial impact to the Mount Lyell salamander from actions to restore large areas of suitable foraging and breeding habitat, and to further protect meadow, wetland, and riparian habitats within the Merced River floodplain by restricting new development.

Cumulative Effects. Projects that substantially affect rocky slopes, seeps adjacent to streams, meadow and wetland habitats would likely affect the Mount Lyell salamander. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, 2009 Fire

Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and breeding habitat for the salamander. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the Mount Lyell salamander include those that affect rocky areas, seeps, talus slopes, and granitic areas adjacent to streams and waterfalls such as the Parkwide Communication Data Network and Tioga Road Rehabilitation Projects. However, due to the specialized habitat needs of this species, most projects would likely not affect the species.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on Mount Lyell salamander.

Foothill yellow-legged frog (*Rana boyllii*)

Direct and Indirect Effects. The few remaining populations of foothill yellow-legged frogs live in or near permanent freshwater rocky streams and rivers in a variety of habitats, including valley-foothill hardwood and conifer, chaparral, and wet meadow types. Recent surveys found no foothill yellow-legged frogs in Yosemite National Park (Fellers and Freel 1995; Fellers 1997) However, potential suitable habitat for this species occurs in Segments 2, 3, 4, 6, 7, and 8. This species is believed to be extirpated from the Merced River corridor in Yosemite National Park.

Overall, the Preferred Alternative in the *Merced River Plan/DEIS* would have a beneficial impact to the foothill yellow-legged frog from actions to restore large areas of suitable foraging and breeding habitat in Segments 2, 4, and 7, and to further protect riparian and meadow habitat within the Merced River floodplain by restricting new development.

Cumulative Effects. Projects that substantially affect riparian woodland and meadow habitats would likely affect the foothill yellow-legged frog. Regional and parkwide planning efforts such as the Vegetation Management Plan, General Ecological Restoration, Grazing Allotment Permit Renewals (U.S. Forest Service), 2009 Fire Management Plan, Invasive Plant Management Plan Update, Fuels reductions/forest rehabilitation projects (U.S. Forest Service), High Elevation Aquatic Resources Management Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan, and Tuolumne Meadows Concept Plan could improve the size, integrity, and connectivity of suitable foraging and breeding habitat for the foothill yellow-legged frog. These actions could have long-term, beneficial effects on suitable habitat, depending upon the extent of their implementation over time.

Projects that could have a potentially adverse effect on the foothill yellow-legged frog include those that affect riparian/woodland and wet meadow habitats, such as the Parkwide Communication Data Network, Tioga Road Rehabilitation, and Tuolumne Meadows Water Treatment System Improvements Projects.

The actions under the Preferred Alternative would have long-term, beneficial effects on special-status species in the Merced River corridor. However, in relation to past, present, and reasonably foreseeable future actions throughout the Sierra Nevada and larger region, (e.g., introduction and spread of nonnative species, direct displacement of habitat) the actions under Alternative 5 would have a minimal beneficial effect. Overall, in conjunction with actions proposed in Alternative 5, cumulative actions on special status species would result in long-term, adverse effects on foothill yellow-legged frog.

Park Rare Species

Plants

Segment 1: Merced River Above Nevada Fall

There are ten park rare plant species that are potentially found in Segment 1: California bolandra (*Bolandra californica*), Mono Hot Springs evening primrose (*Camissonia sierrae* ssp. *alticola*), cleft sedge (*Carex fissuricola*), Yosemite sedge (*Carex sartwelliana*), Bolander's woodreed (*Cinna bolanderi*), common mare's tail (*Hippuris vulgaris*), redray alpinegold (*Hulsea heterochroma*), western quillwort (*Isoetes occidentalis*), Coleman's piperia (*Piperia colemanii*), and Oregon saxifrage (*Saxifraga oregona*).

Special status plants may be adversely affected in the short term by construction/removal, restoration, and monitoring activities associated with management actions proposed in the Preferred Alternative in Segment 1. Proposed actions in the near-term at the Merced Lake High Sierra Camp in Segment 1 would retain the Merced Lake High Sierra Camp, reduce the camp capacity, and replace flush toilets with composting toilets. Potential adverse impacts include temporary disturbance and loss of habitat, potential loss of individual plants or populations, and the potential introduction and spread of invasive nonnative species. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize these short-term impacts. Overall, the Preferred Alternative would result in long-term, beneficial impacts on special status plants in Segment 1 by reducing stresses from visitor use.

Segment 2: Yosemite Valley

There are 26 park rare plant species that are potentially found in Yosemite Valley: Lemmon's wild ginger (*Asarum lemmonii*), threadleaf beakseed (*Bulbostylis capillaris*), Sierra suncup (*Camissonia sierrae* ssp. *sierrae*), Buxbaum's sedge (*Carex buxbaumii*), Yosemite sedge (*Carex sartwelliana*), short-bracted bird's beak (*Cordylanthus rigidus* ssp. *brevibracteatus*), stream orchid (*Epipactis gigantea*), purple fawnlily (*Erythronium purpurascens*), northern mannagrass (*Glyceria borealis*), redray alpinegold (*Hulsea heterochroma*), Sierra laurel (*Leucothoe davisiae*), false pimpernel (*Linderia dubia*

var. *anagallidea*), tanoak (*Lithocarpus densiflorus* var. *echinoides*), small flowered monkeyflower (*Mimulus inconspicuus*), cutleaf monkeyflower (*Mimulus lacinatus*), yellowlip pansy monkeyflower (*Mimulus pulchellus*), California bog asphodel (*Narthecium californicum*), azure penstemon (*Penstemon azureus* ssp. *angustissimus*), Purdy's foothill penstemon (*Penstemon heterophyllus* var. *purdyi*), tansy leafed phacelia (*Phacelia tanacetifolia*), Torrey's popcornflower (*Plagiobothrys torreyi* var. *torreyi*), Nutall's pondweed (*Potamogeton epihydrus* ssp. *nuttallii*), wood saxifrage (*Saxifraga mertensiana*), Oregon saxifrage (*Saxifraga oregona*), small bur reed (*Sparganium natans*), and narrowpetal wakerobin (*Trillium angustipetalum*).

The Preferred Alternative would restore significant amounts of meadow, wetland, coniferous and broadleaf forest, and riparian habitats in Segment 2. Restoration of these habitats would have a beneficial impact on park rare plant species that occur in those communities. Special status plants may be adversely affected in the short term by construction/removal, restoration, and monitoring activities associated with management actions proposed in the Preferred Alternative in Segment 2. Potential adverse impacts include temporary disturbance and loss of habitat, potential loss of individual plants or populations, and the potential introduction and spread of invasive nonnative species. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize these short-term impacts. Proposed actions to manage visitor use and facilities in Segment 2 would occur at Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4. It is unlikely that any park rare plant species occur in these areas due to the high levels of visitation and human-related impacts such as vegetation trampling and soil compaction. In addition, no park rare plants were found during rare plant surveys conducted in 2010 in the areas listed above. Therefore, it is unlikely that park rare plant species will be affected by actions to manage visitor use and facilities in the Curry Village, Yosemite Village, Housekeeping Camp, Yosemite Lodge, and Camp 4 areas.

Vegetation removed under the Preferred Alternative would not substantially fragment existing native vegetation communities, reduce species diversity, or substantially reduce the overall size or quality of native plant communities in Segment 2 because new construction would primarily occur in or adjacent to previously disturbed locations or in more resilient, upland habitat. Special status plant species would be avoided during construction activities. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize short-term impacts. Non-native plant species would continue to invade undeveloped areas in Yosemite Valley. New construction can promote non-native species because it creates conditions, such as disturbed soil, that are favored by many non-native plants. An increase in non-native plants could result in habitat loss and a competition for resources (i.e., light, water, and nutrients) for the rare plants in Segment 2.

Overall, the Preferred Alternative would result in long-term beneficial impacts on special status plants in Segment 2.

Segments 3 and 4: Merced Gorge and El Portal

There are eight park rare plant species that are potentially found in the Merced Gorge and El Portal: Thompkins' sedge (*Carex tompkinsii*), narrowleaf collinsia (*Collinsia linearis*), mountain lady's slipper (*Cypripedium montanum*), tanoak (*Lithocarpus densiflorus* var. *echinoides*), northern bugleweed

(*Lycopus uniflorus*), small flowered monkeyflower (*Mimulus inconspicuus*), valley oak (*Quercus lobata*), and Sierra bladdernut (*Staphylea bolanderi*).

The Preferred Alternative would restore nine acres of riparian and valley oak woodland habitats in Segment 4. Restoration of these habitats would have a beneficial impact on park rare plant species that occur in those communities. Special status plants may be adversely affected in the short term by construction/removal, restoration, and monitoring activities associated with management actions proposed in the Preferred Alternative in Segment 4. Potential adverse impacts include temporary disturbance and loss of habitat, potential loss of individual plants or populations, and the potential introduction and spread of invasive nonnative species. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize these short-term impacts.

Vegetation removed under the Preferred Alternative would not substantially fragment existing native vegetation communities, reduce species diversity, or substantially reduce the overall size or quality of native plant communities in Segment 4 because new construction would primarily occur in or adjacent to previously disturbed locations or in more resilient, upland habitat. Special status plant species would be avoided during construction activities. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize short-term impacts. There could be indirect effects on these species as a result of the increased human population in El Portal, which could promote additional foot traffic and possible trampling of these species. Non-native plant species would continue to invade undeveloped areas in El Portal. New construction can promote non-native species because it creates conditions, such as disturbed soil, that are favored by many non-native plants. An increase in non-native plants could result in habitat loss and a competition for resources (i.e., light, water, and nutrients) for the rare plants in El Portal. Currently, vehicles park under the dripline of the 38 valley oak trees that are designated as a biological ORV. This practice compacts soil under the trees and impacts root health, water uptake, and soil aeration. Additionally, existing development and trampling in the vicinity of these trees limits the area where oak seedlings can be recruited. Under the Preferred Alternative, oak protection areas would be designated in the Odgers' fuel transfer center as well as the adjacent parking lots. Parking within 10 feet of the base of oak trees and parking and new building construction within the oak protection area would be prohibited. Nonnative fill would be removed and soils decompacted. Appropriate native understory plant species would be planted. Overall, these actions would result in long-term beneficial impacts on valley oaks in Segments 4.

Overall, the Preferred Alternative would result in long-term beneficial impacts on special status plants in Segments 3 and 4.

Segments 5-8: South Fork Merced River

There are 18 park rare plant species that are potentially found in the South Fork Merced River corridor: spurred snapdragon *(Antirrhinum leptaleum)*, Lemmon's wild ginger (*Asarum lemmonii*), silvery sedge (*Carex canescens*), Yosemite sedge (*Carex sartwelliana*), Bolander's woodreed (*Cinna bolanderi*), narrowleaf collinsia (*Collinsia linearis*), mountain lady's slipper (*Cypripedium montanum*), California sunflower (*Helianthus californicus*), yellow and white monkeyflower (*Mimulus bicolor*), small flowered

monkeyflower (*Mimulus inconspicuus*), Sierra sweet-bay *(Myrica hartwegii),* Sierra skullcap *(Scutellaria bolanderi* ssp. *bolanderi),*Clark's ragwort (*Senecio clarkianus*), small bur reed (*Sparganium natans*), Sierra bladdernut (*Staphylea bolanderi*), narrowpetal wakerobin (*Trillium angustipetalum*), California red huckleberry (*Vaccinum parvifolium*), and Hall's mule ears (*Wyethia elata*).

Proposed facilities actions in the near-term in the Wawona Campground area would involve removal of 13 sites that are either within the 100-year floodplain or in culturally sensitive areas. The Preferred Alternative would restore two acres of riparian habitat in Segment 7. Restoration of this habitat would have a beneficial impact on park rare plant species that occur in riparian areas. Special status plants may be adversely affected in the short term by construction/removal, restoration, and monitoring activities associated with management actions proposed in the Preferred Alternative in Segment 7. Potential adverse impacts include temporary disturbance and loss of habitat, potential loss of individual plants or populations, and the potential introduction and spread of invasive nonnative species. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize these short-term impacts.

Vegetation removed under the Preferred Alternative would not substantially fragment existing native vegetation communities, reduce species diversity, or substantially reduce the overall size or quality of native plant communities in Segment 7 because new construction would primarily occur in or adjacent to previously disturbed locations or in more resilient, upland habitat. Special status plant species would be avoided during construction activities. Adhering to proposed mitigation measures presented in Appendix I and avoiding the removal of vegetation, where possible, would minimize short-term impacts. New construction can promote non-native species because it creates conditions, such as disturbed soil, that are favored by many non-native plants. An increase in non-native plants could result in habitat loss and a competition for resources (i.e., light, water, and nutrients) for the rare plants in Wawona.

Overall, the Preferred Alternative would result in long-term beneficial impacts on special status plants in Segments 5 through 8.

CHAPTER VI. DETERMINATION OF EFFECTS ON FEDERALLY LISTED OR CANDIDATE SPECIES

The impact on listed or candidate species are analyzed in accordance with USFWS guidelines. Federal agencies must consult with the Fish and Wildlife Service to ensure their actions would not jeopardize the continued existence of any federally listed or proposed threatened or endangered species, or adversely modify designated or proposed critical habitat (Endangered Species Act, section 7(a)(2)). If listed species or their critical habitat are present, the federal agency must determine if the action would have "no effect," "may effect, not likely to adversely affect," or "may effect, likely to adversely affect" those species or their habitat. The National Park Service makes the determination of effect for the alternatives following guidance outlined in the *Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conference Activities* (USFWS and NMFS 1998). The following guidance is used to determine impacts whether the species is protected under the Endangered Species Act, listed or identified as sensitive by the state, or identified as sensitive by the park, another federal agency (e.g., BLM or USFS) or a local agency.

This determination of effects is based solely on the Preferred Alternative in the *Draft Merced River Plan* as described in Chapter III of this document, and does not assume any potential mitigation measures. Mitigation measures are recommended in Chapter VII. The following criteria were used to develop determinations:

- ***No Effect*** – The project (or action) is located outside suitable habitat **and** there would be no disturbance or other direct or indirect impacts on the species. The action would not affect the listed species or its designated critical habitat.

- ***May Affect, Not Likely to Adversely Affect*** – The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely to be beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial.

    a. ***Beneficial effects*** – contemporaneous positive effects without any adverse effects.

    b. ***Insignificant effects*** – relate to the size of the impact and should never reach the scale where take would occur.

    c. ***Discountable effects*** – those that are extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects or (2) expect discountable effects to occur.

- ***May Affect, Likely to Adversely Affect*** – The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

Determinations for Federally Listed Threatened or Endangered Species

Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* will have no effect on the Sierra Nevada bighorn sheep. The following conclusions have led to this determination:

- There would be no direct or indirect effects on the Sierra Nevada bighorn sheep or its preferred habitat.

Valley elderberry longhorn beetle (*Desmocerus californicus*)

It is the determination of the National Park Service that the actions proposed in the *Merced River Plan/DEIS* may affect, and are likely to adversely affect, the Valley elderberry longhorn beetle. The following conclusions have led to this determination:

- Elderberry plants grow within the project area. Based on the foregoing analysis, there is a likelihood that "take," as defined in the Endangered Species Act, may occur.

Elderberry plants, the sole foodplant and habitat for the Valley elderberry longhorn beetle, are abundant in the Merced River canyon in the elevation range of the beetle, especially in the El Portal area. Elderberry plants would be avoided during construction wherever practicable.

Determinations for Federal Candidate Species

Whitebark pine (*Pinus albicaulis*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* will have no effect on the whitebark pine. The following conclusions have led to this determination:

- There would be no direct or indirect effects on the whitebark pine or its habitat.

Yosemite toad (*Anaxyrus canorus*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* may affect, but are not likely to adversely affect, the Yosemite toad. The following conclusions have led to this determination:

- Yosemite toads utilize higher elevation wet meadows, small ponds, and flooded shallow grassy areas in Segments 1 and 5.

- Actions proposed in Segments 1 and 5 are generally habitat restoration projects that would ultimately benefit Yosemite toad.

Sierra Nevada yellow-legged frog (*Anaxyrus canorus*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* may affect, but are not likely to adversely affect, the Sierra Nevada yellow-legged frog. The following conclusions have led to this determination:

- Sierra Nevada yellow-legged frogs utilize aquatic habitats in Segments 1 and 5.
- Actions proposed in Segments 1 and 5 are generally habitat restoration projects that would ultimately benefit Sierra Nevada yellow-legged frog.

California wolverine (*Gulo gulo*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* may affect, but are not likely to adversely affect, the California wolverine. The following conclusions have led to this determination:

- California wolverines have not been verified in Yosemite National Park since 1915; unconfirmed sightings have been reported in 1959 and 1990. However, California wolverine could utilize a variety of habitats in Segments 1 and 5, including wet meadows.
- Actions proposed in Segments 1 and 5 are generally habitat restoration projects that would ultimately benefit California wolverine.

Pacific fisher (*Martes pennant pacifica*)

It is the determination of the National Park Service that actions that are proposed in the *Merced River Plan/DEIS* may affect, but are not likely to adversely affect, the Pacific fisher. The following conclusions have led to this determination:

- Pacific fisher may utilize coniferous forests in Segments 1, 2, 5, and 7.
- Actions proposed in Segments 1 and 5 are generally habitat restoration projects that would ultimately benefit Pacific fisher.
- Although suitable foraging habitat for this species would be impacted by proposed actions in Segments 2 and 7, this species is sensitive to human presence and is not likely to utilize habitats in these areas.

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APPENDIX O

DRAFT WETLAND STATEMENT OF FINDINGS

APPENDIX O

WETLAND STATEMENT OF FINDINGS FOR THE DRAFT MERCED WILD AND SCENIC RIVER COMPREHENSIVE MANAGEMENT PLAN

This Wetlands Statement of Findings (WSOF) characterizes the wetland resources that occur within the project area for the Merced Wild and Scenic River Comprehensive Management Plan (Merced River Plan), describes the impacts the project will likely have on wetland resources, and documents the steps the National Park Service (NPS) will take to avoid, minimize, and offset these impacts. This Wetland Statement of Findings is included in this document for public review to meet the obligations of Executive Order 11990 (Protection of Wetlands), Director's Order 77-1: Wetland Protection, and National Park Service Procedural Manual 77-1: Wetland Protection (2008).

PURPOSE OF THIS STATEMENT OF FINDINGS

Under Directors Order #77-1 for Wetland Protection, Part 2.5 states:

> Actions proposed by the NPS that have the potential to have adverse impacts on wetlands will be addressed in an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). If the preferred alternative in an EA or EIS will result in adverse impacts on wetlands, a "Statement of Findings" documenting compliance with this Director's Order (D.O.) and Procedural Manual #77-1 will be completed. Actions that may be excepted from the Statement of Findings requirement are identified in the Procedural Manual.

In #77-1, Section 5.3.4 (3) states:

> "...A draft EIS that identifies a preferred alternative that will have adverse impacts on wetlands must be accompanied by a separately identifiable draft WSOF that explains why an alternative with such impacts was chosen and that meets the other requirements identified in Section 5.3.5 of these procedures."

The purpose of this Wetland Statement of Findings is to review the Merced River Plan in sufficient detail to:

- Avoid, to the extent possible, the short-and long-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative
- Describe the effects on wetland values associated with the proposed action
- Provide a thorough description and evaluation of mitigation measures developed to achieve compliance with Executive Order 11990 (Protection of Wetlands) and National Park Service Procedural Manual 77-1: Wetland Protection
- Ensure "no net loss" of wetland functions or values

CHARACTERISTICS OF EXISTING WETLANDS

Wetland Extent

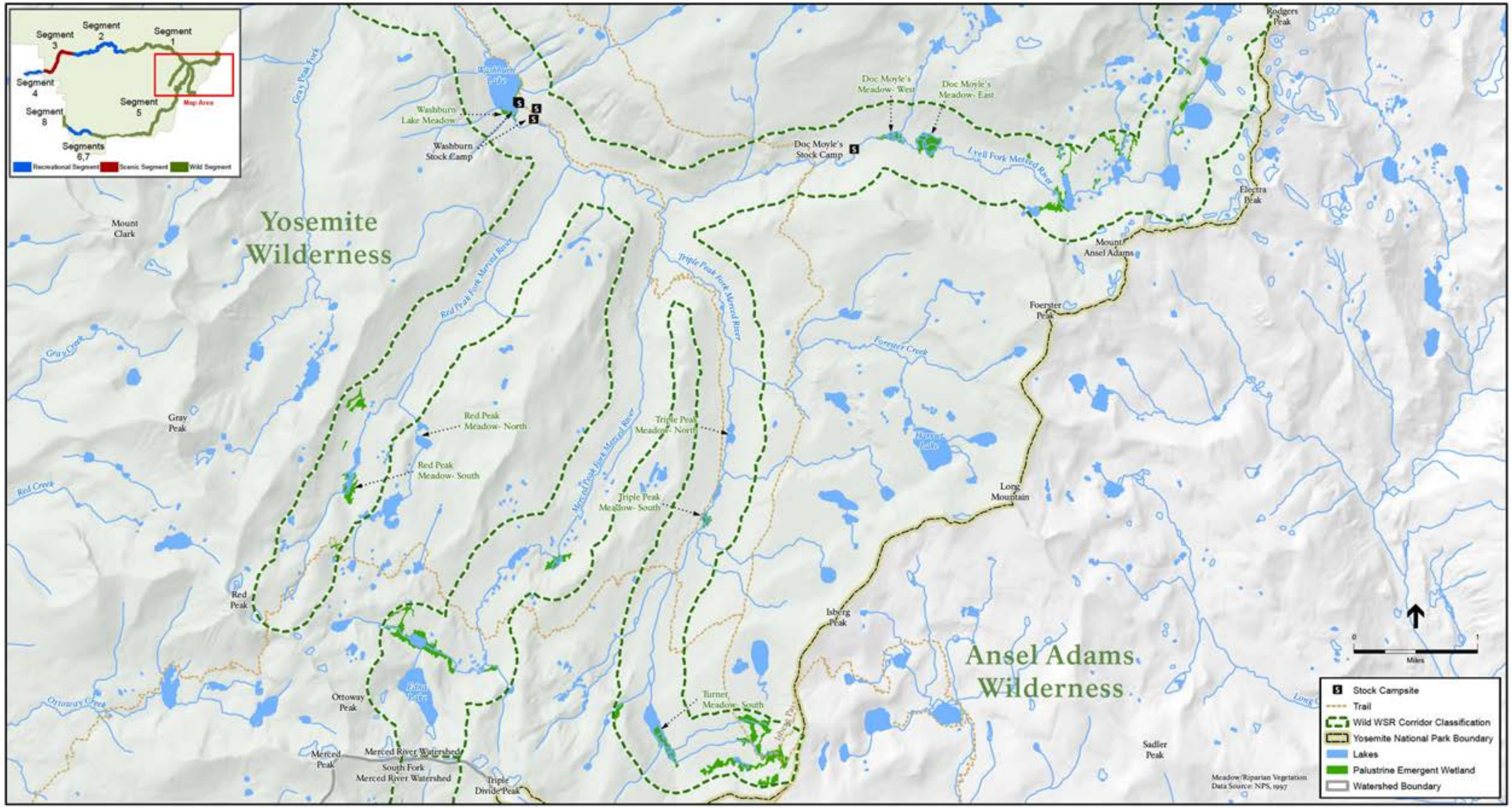
There are wetlands and/or riparian habitats in every segment of the Merced River corridor (**figures O-1** through **O-8**). Approximately 1,600 acres of wetland and/or riparian habitat occur within the Merced River corridor. **Table O-1** provides a summary of the classes and areal extent of wetland and riparian habitats by corridor segment. Wetland data were obtained from site-specific wetland delineations, if available. National Wetland Inventory data (USFWS 1995), supplemented with data from the Yosemite Parkwide Vegetation Map (1997), were used to describe wetlands in the Merced River corridor in areas where delineation data were not available (site-specific wetland delineation data was only available for limited areas in Yosemite Valley). Data on riparian habitats was taken from the *Merced River and Riparian Vegetation Assessment* (Cardno ENTRIX 2011) for the river corridor through Yosemite Valley. Data from the Yosemite Parkwide Vegetation Map (1997) were used to describe riparian habitats outside of Yosemite Valley. This provides a conservative estimate of wetlands in the project area.

TABLE O-1: CLASSES AND AREAL EXTENT OF WETLAND HABITATS IN THE MERCED RIVER CORRIDOR

Wetland Class	Area per Segment (acres)							
Cowardin Class	1	2	3	4	5	6	7	8
Riverine/Lacustrine	404.5	141.0	96.2	42.3	89.5	0.4	64.0	27.7
Palustrine Emergent Wetland (wet meadows)	216.5	261.2	0	1.7	69.8	0	0	0
Palustrine Forested Wetland	0	116.7	11.8	5.2	0.9	0	0	0
Palustrine Scrub Shrub Wetland	10.0	13.7	12.0	4.6	3.3	0	2.5	0
SOURCE: USFWS 1995; NPS 1997; NPS 2011								

The NPS classifies and maps wetland habitats using a system developed by wetland ecologists and an interagency team for the U.S. Fish and Wildlife Service (USFWS), which is often referred to as the Cowardin classification system (Cowardin et al. 1979). Wetlands, as defined by the USFWS, are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water (Cowardin et al. 1979). For purposes of this classification, wetlands must have one or more of the following attributes:

- The land predominantly supports hydrophytes, at least periodically. Hydrophytes are plants that grow in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.
- The substrate is predominantly undrained hydric soils. Hydric soils are wet long enough to periodically produce anaerobic conditions.
- The substrate is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).



SOURCE: NPS, 1997, 2011

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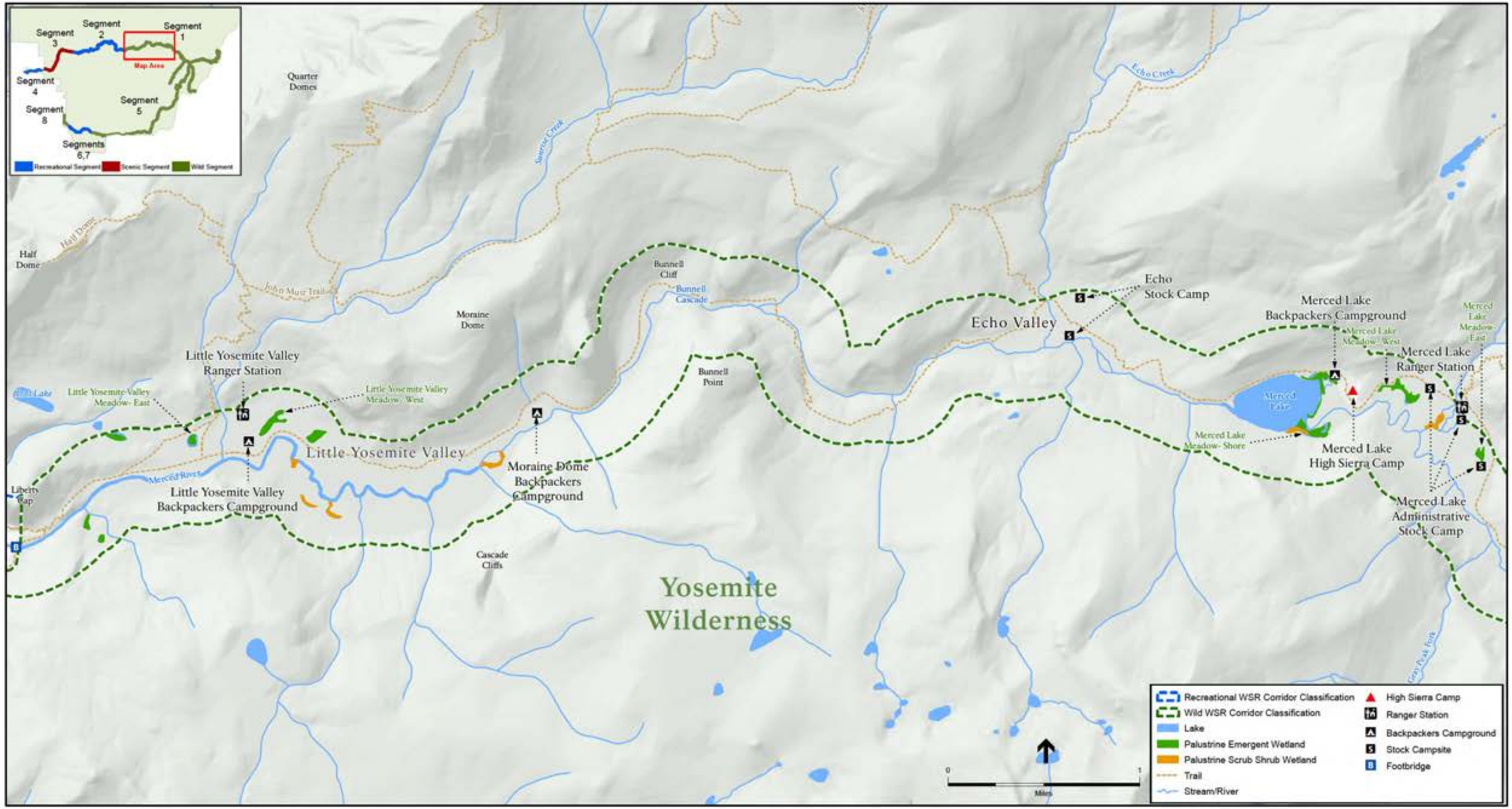
Figure O-1

Segment 1 - Merced River Above Nevada Fall Wetlands

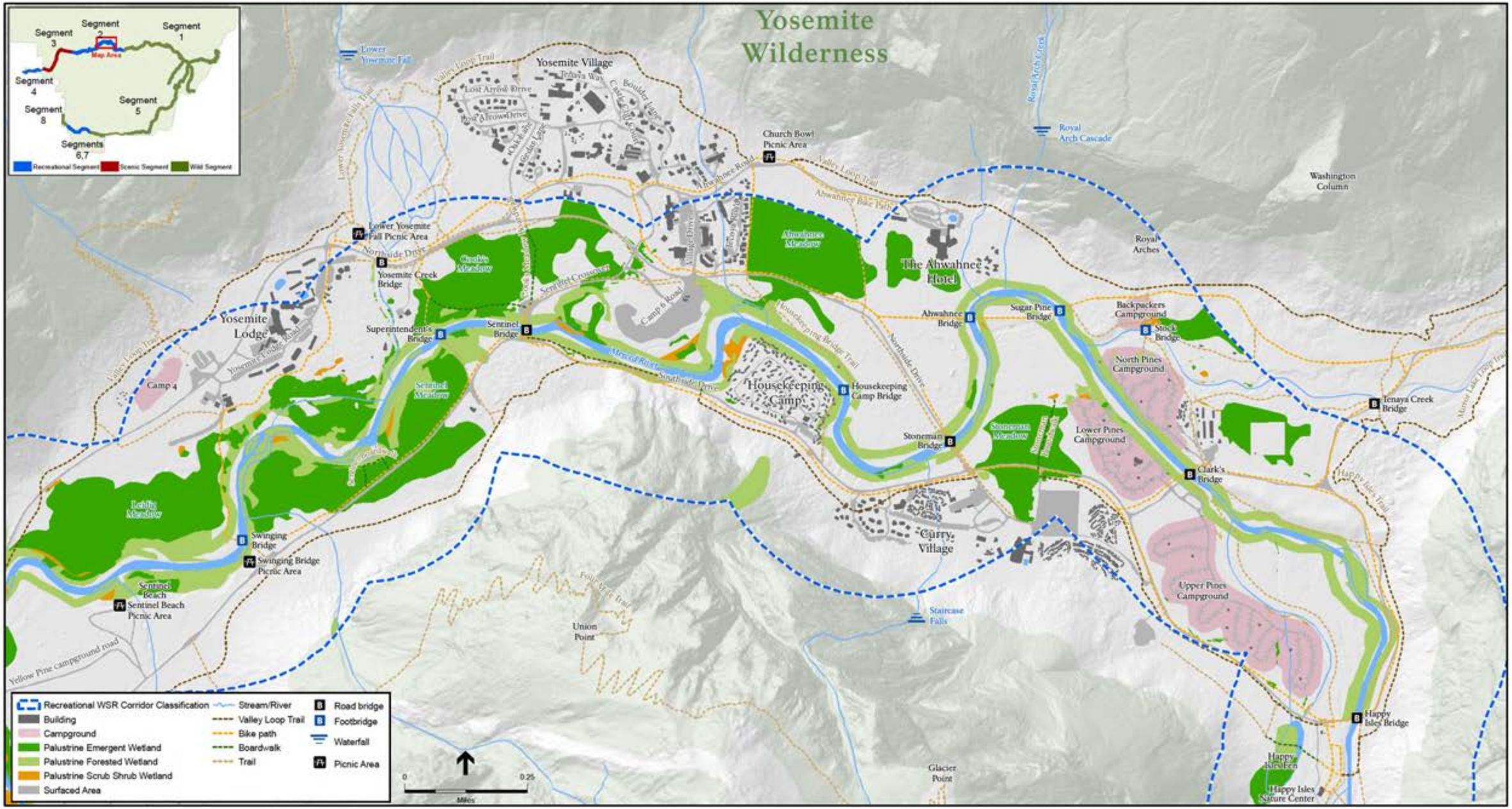


SOURCE: NPS, 1997, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-2

Segment 1 - Little Yosemite Valley and Merced Lake High Sierra Camp Wetlands

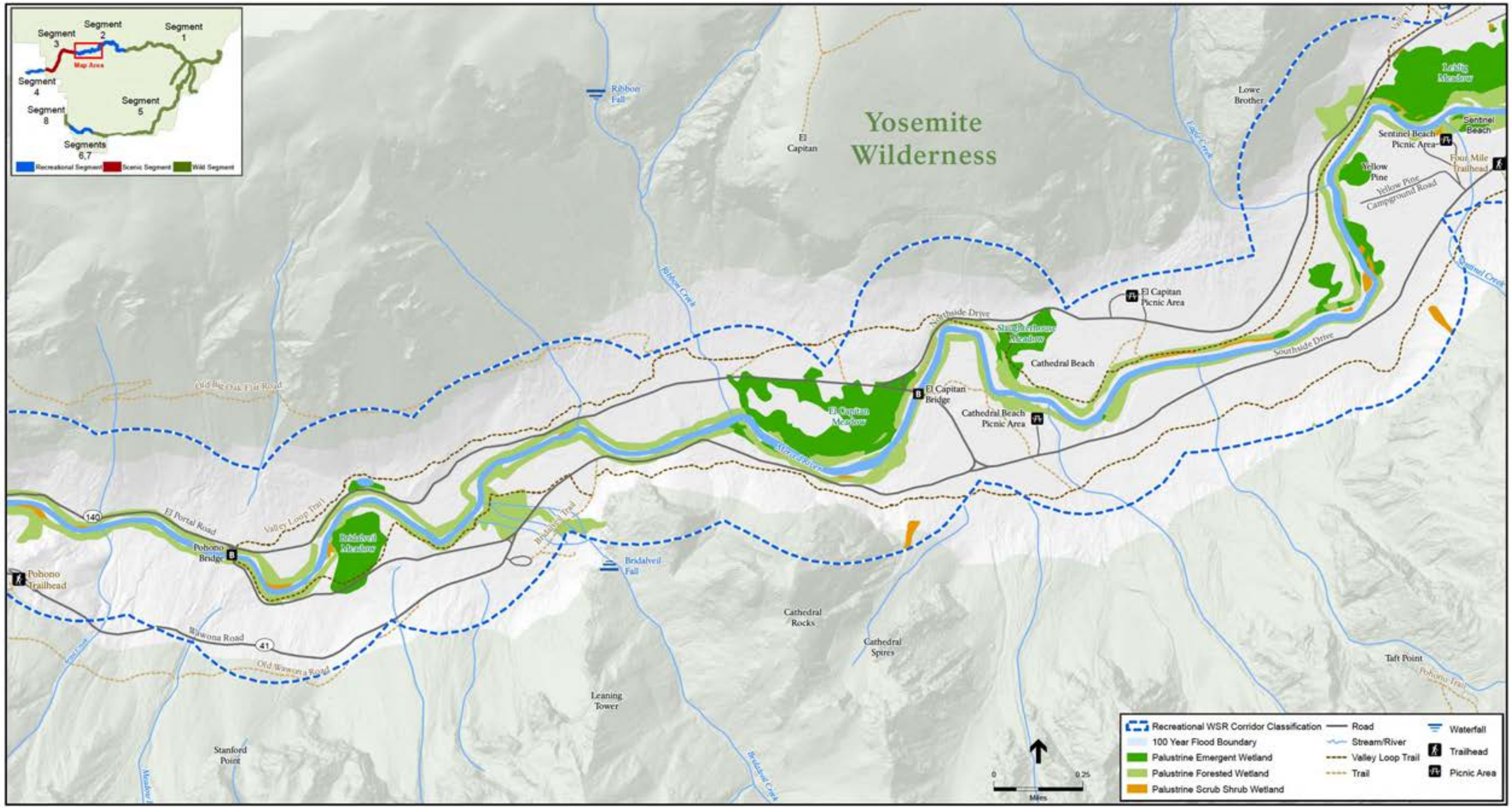


SOURCE: NPS, 1997, 2006, 2010, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-3

Segment 2 - Yosemite Lodge, Yosemite Village, and The Ahwahnee Wetlands



SOURCE: NPS, 1997, 2010, 2011

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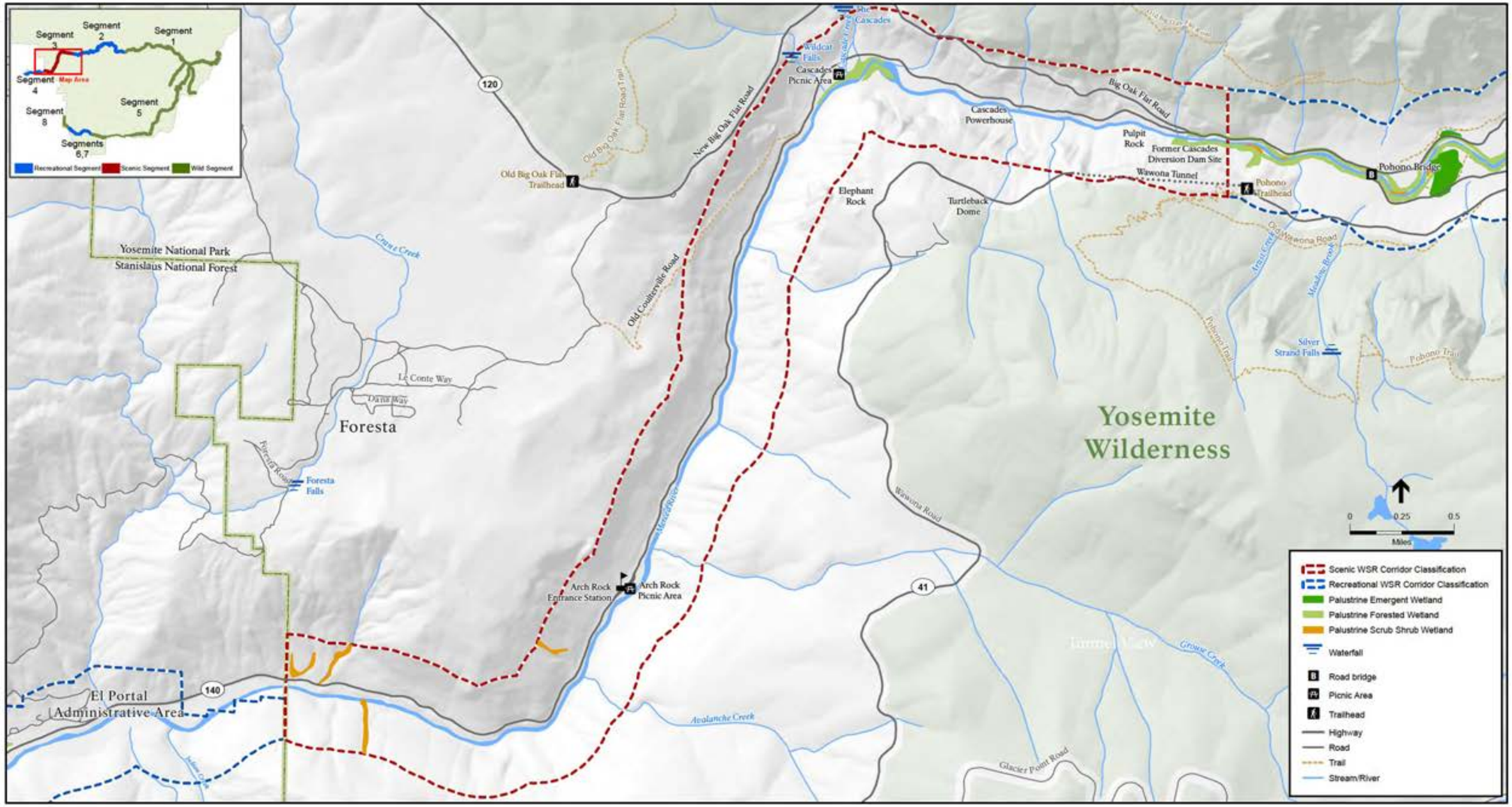
Figure O-4

Segment 2 - El Capitan Meadow, Cathedral Beach, and Sentinel Beach Wetlands



SOURCE: NPS, 1997, 2010, 2011

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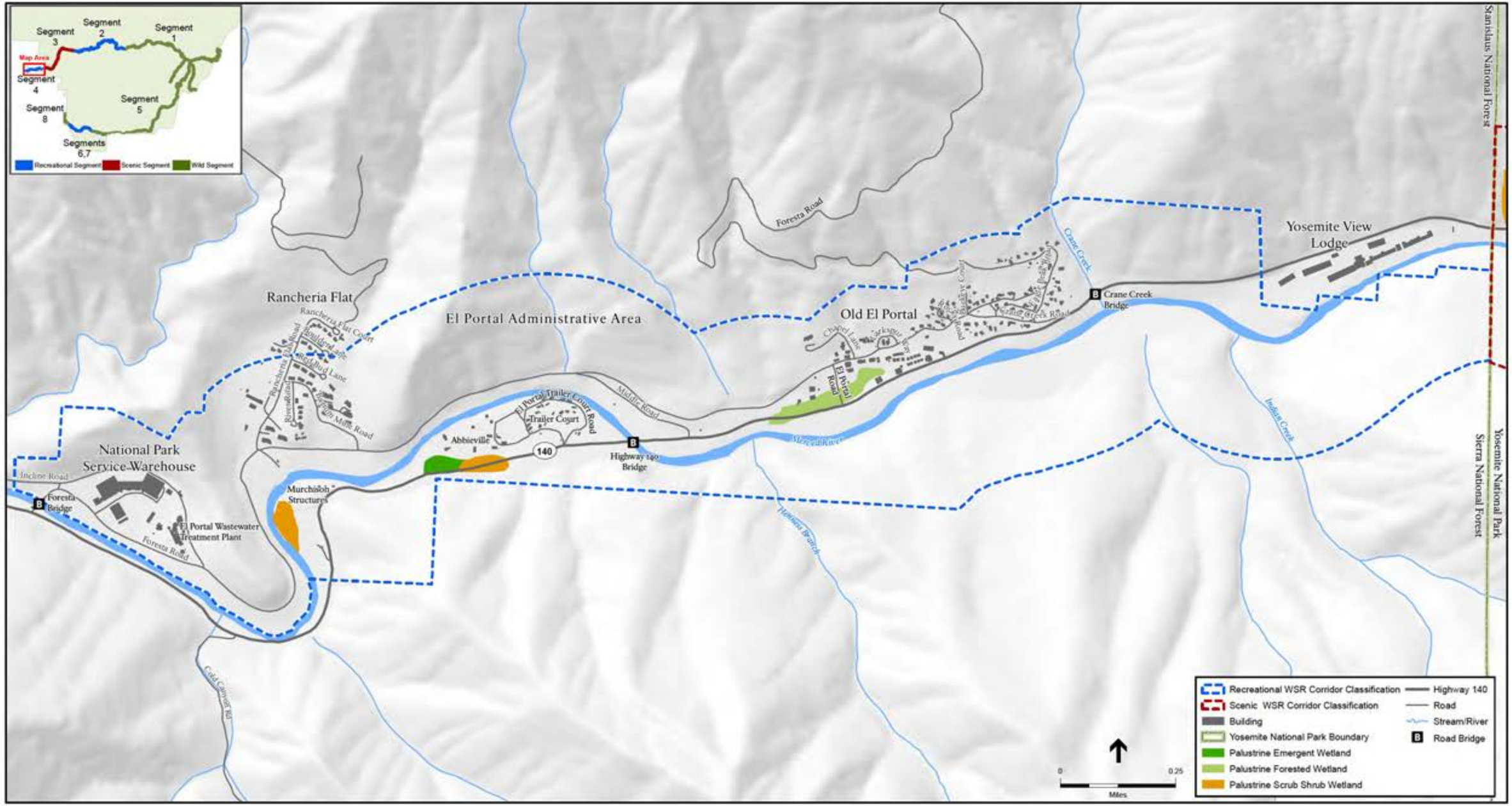
Figure O-5

Segment 3 - Merced Gorge Wetlands

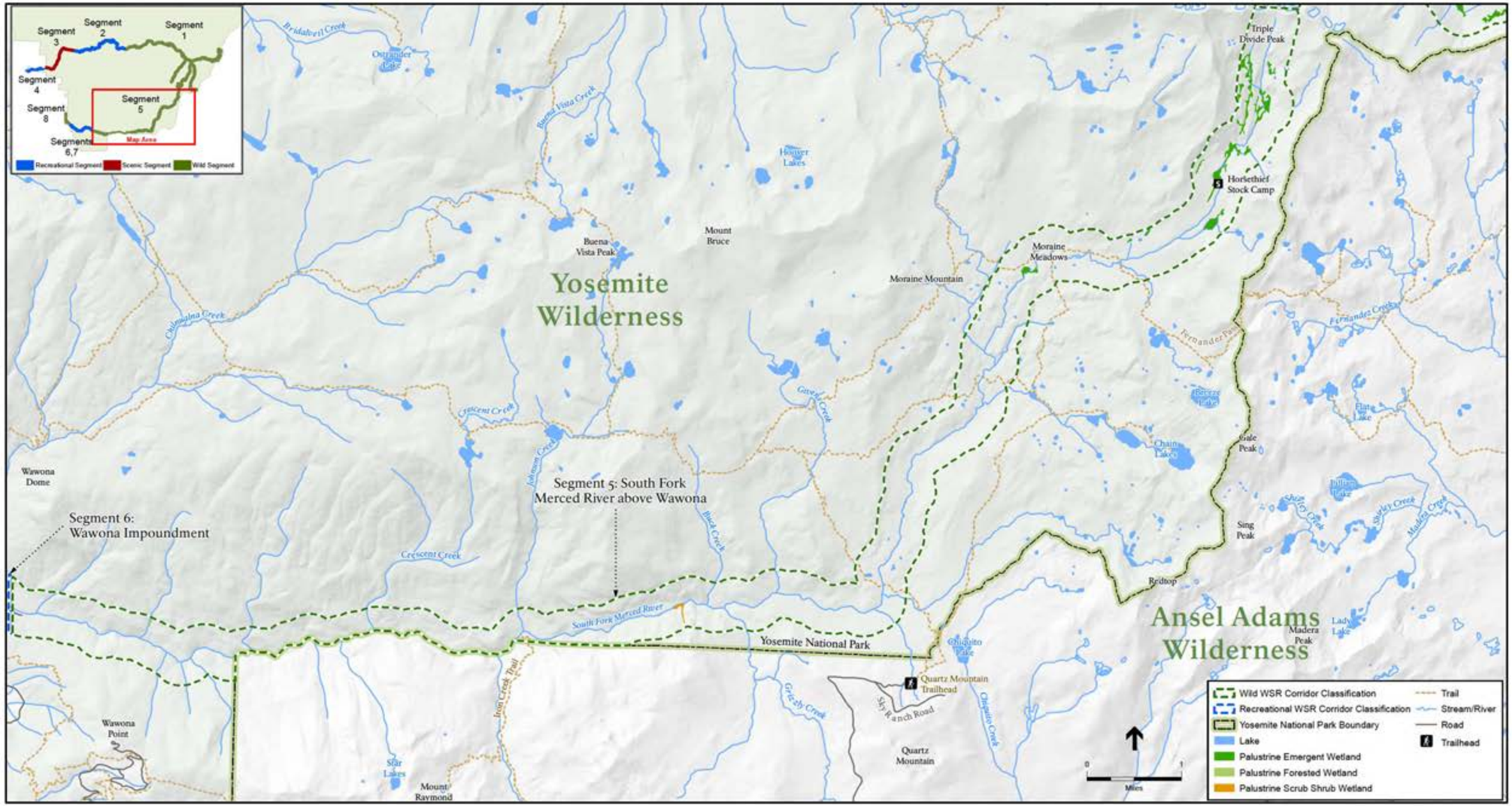


SOURCE: NPS, 1997, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-6

Segment 4 – El Portal Wetlands

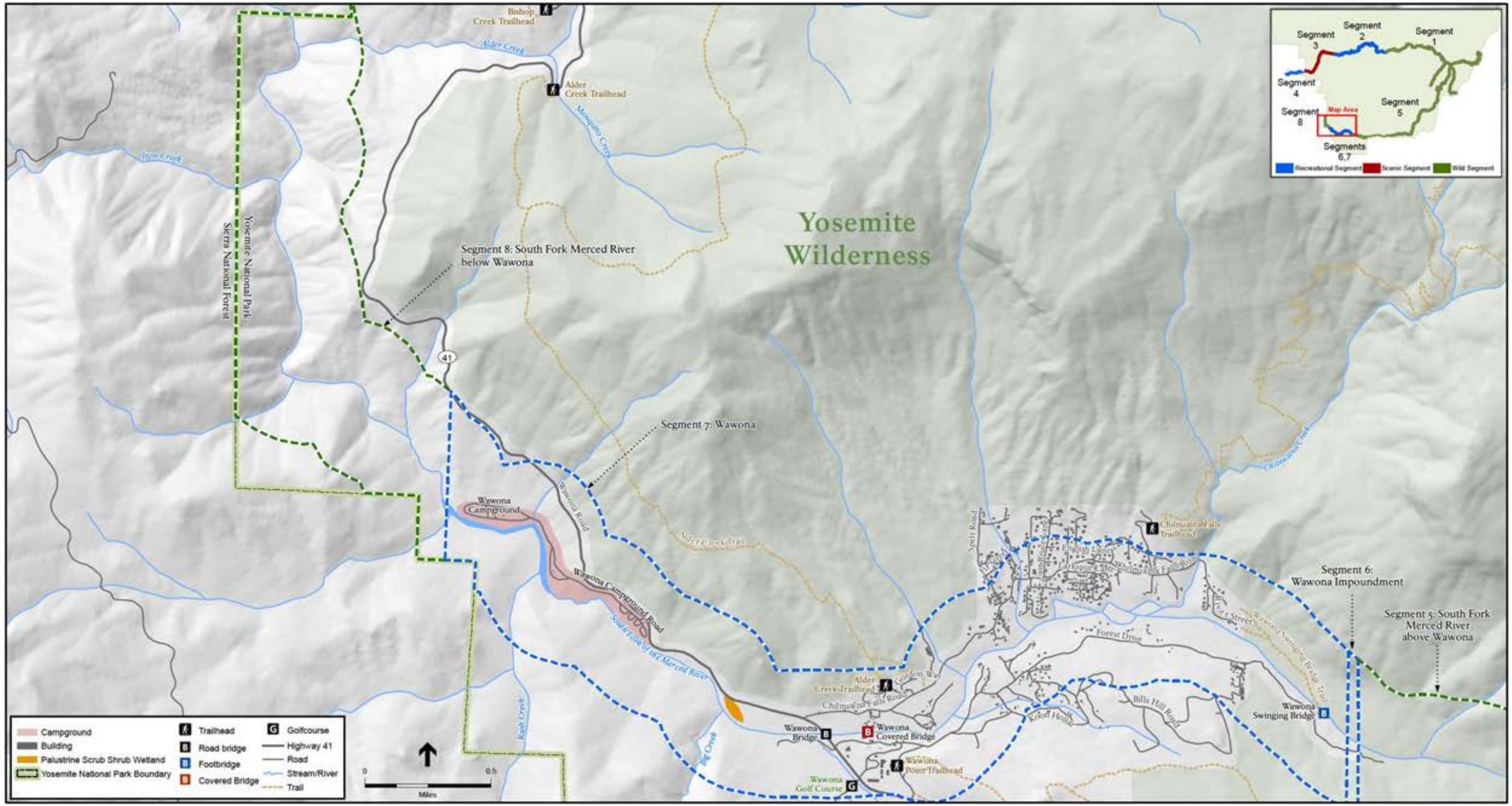


SOURCE: NPS, 1997, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-7

Segment 5 - South Fork Merced River Above Wawona Wetlands



SOURCE: NPS, 1997, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-8

Segments 6,7, and 8 - Wawona Impoundment, Wawona, and the South Fork Merced River Below Wawona Wetlands

The U.S. Army Corps of Engineers (Corps) uses three wetland parameters to define wetlands for regulatory purposes: hydrophytic vegetation, hydric soil, and wetland hydrology. When all three parameters are present, the wetland is considered a jurisdictional wetland. The Cowardin system defines more habitat types as wetlands than does the Corps definition as it recognizes many unvegetated sites (e.g., mudflats, stream shallows, saline lakeshores, playas) or sites lacking soil (e.g., rocky shores, gravel beaches) as wetland habitats if wetland hydrology is present. The reason these sites lack hydrophytic vegetation and/or hydric soil is due to natural chemical or physical factors. Although the Corps does not consider these sites to be wetlands, they are still subject to regulations under section 404 of the CWA as other waters of the United States. For purposes of this document, both Cowardin wetlands and waters of the United States as defined by the Corps are referred to as wetlands.

Wetland Characteristics

Specific wetland classes identified within the Merced River corridor include riverine (rivers, creeks, and streams), palustrine (shallow ponds, riparian wetlands, wet meadows, marshes), and lacustrine (lakes and ponds). Using the Cowardin classification system, specific wetland and deepwater classes within the Merced River corridor include:

- *Riverine upper perennial* – main channels of the Merced River and the South Fork Merced River (may be wetland or deepwater depending on depth)
- *Riverine intermittent* – intermittent tributaries to the Merced River and South Fork Merced River (wetlands)
- *Palustrine emergent* – emergent wetland habitat (marsh, meadow) along the Merced River and South Fork Merced River subject to various flooding regimes
- *Palustrine forested* – riparian forest wetland habitat along the Merced River and South Fork Merced River subject to various flooding regimes
- *Palustrine scrub shrub* – riparian scrub (e.g., willow) wetland habitat along the Merced River and South Fork Merced River and its tributaries subject to various flooding regimes
- *Lacustrine littoral* – shallow lake margins that are less than 2 meters deep at low water and have less than 30% vegetation cover*Lacustrine limnetic* – portions of lakes that are more than 2 meters deep at low water (e.g., Merced Lake, Washburn Lake) along the Merced River (deepwater habitat)

The following discussion provides general descriptions for each wetland class identified within the Merced River ecosystem.

Riverine Upper Perennial. Riverine upper perennial habitat within the corridor includes the open and flowing water of the Merced River and the South Fork Merced River. It is the permanently flooded rock-, cobble-, or sand-bottom channel with little to no in-stream vegetation. Occasional sandbars form within and at the channel edge and typically support willows and emergent (grasses and herbs) vegetation. Based on the NPS guidelines, the majority of the main stem of the Merced River and the South Fork Merced River would be classified as riverine upper perennial wetland. Channel portions that lie at a depth of 2

meters below low water would be considered deep water. The main channel of the Merced River and the South Fork Merced River would likely be considered as jurisdictional by the Corps under section 404 of the CWA, not as wetlands but as other waters of the United States.

Riverine Intermittent. Numerous riverine intermittent drainages (other waters of the United States) are tributary to the main stem Merced River and the South Fork Merced River. Almost all riverine intermittent drainages within the river corridor are classified as Cowardin wetlands and waters of the United States. These drainages often have a nonsoil substrate that is saturated and/or covered by shallow water at some time during the growing season. These wetlands are typically narrow and encompass the lowest portion of creekbeds. Very little wetland vegetation is found in these areas because of the intermittent nature of the flows within the drainage channels. All aboveground drainages within the river corridor are subject to the NPS protection policies under Executive Order 11990. These drainages are classified as other waters of the United States and would be subject to sections 401 and 404 of the CWA.

Palustrine Emergent. Palustrine emergent wetland habitat includes portions of alpine, subalpine, and montane meadows and seeps. These wetland soils are generally deep and peaty, remaining saturated year-round or on a seasonal basis. Vegetation is dominated by grasses, sedges, rushes, and perennial herbs. The meadow wetlands in Yosemite National Park play a particularly critical role in the Merced River ecosystem. High spring flows create wet areas in side channels, low-lying wetlands, meadows, and cutoff channels. These areas support the concentration of organic matter, nutrients, microorganisms, and aquatic invertebrates throughout the relatively dry summer. When the flush of winter or spring flooding occurs, this stored aquatic biomass is washed into the main river channel, forming the base of the aquatic food chain. Examples of palustrine wetlands include portions of Cook's Meadow and meadows adjacent to Washburn and Merced Lakes. These meadow portions are considered wetlands under the Cowardin system, and portions of meadows may also meet the Corps' wetland criteria. Delineated palustrine emergent wetlands are subject to the NPS protection policies under Executive Order 11990 and section 404 of the CWA.

Palustrine Forested. Palustrine forested wetlands are the riparian forest habitats along the main stem of the Merced River and South Fork Merced River that are regularly inundated by normal high-water or flood flows. Palustrine forests within the upper reaches of the main stem of the Merced River and South Fork Merced River consist mainly of evergreen pines and firs, with occasional aspens. In Yosemite Valley, where the river is broad, shallow, and slow-moving, deciduous cottonwoods, willows, and alders dominate the riparian corridor. Substrate under the palustrine forest community varies from rock, gravel, sand, clays, loams, and mud. These areas are classified as either wetland or other waters of the United States by the Corps, depending on site-specific vegetation, soils, and hydrologic conditions, and would be subject to section 401 and/or 404 of the CWA.

Palustrine Scrub Shrub. This habitat type occurs sporadically along the banks of the main stem of the Merced River, the South Fork Merced River, and at lake margins. It is regularly inundated by normal high-water or flood flows. This habitat is dominated by various willows and often intergrades with meadow (palustrine emergent) and riparian (palustrine forest) communities. These communities are typically considered wetlands under the Cowardin system, would be subject to the NPS protection policies under Executive Order 11990, and typically meet the Corps' wetland criteria. These areas may

meet the Corps' criteria of a wetland or other waters of the United States, depending on site-specific vegetation, soils, and hydrologic conditions, and may be subject to sections 401 and/or 404 of the CWA.

Lacustrine Littoral. Lacustrine littoral includes all wetland habitats within a lacustrine system. This classification extends from the shoreward boundary of the system to a depth of 2 meters below low water or to the maximum extent of emergent vegetation. These habitats are adjacent to deep-water lakes and reservoirs along the Merced River. These communities are typically considered wetlands under the Cowardin system, would be subject to the NPS protection policies under Executive Order 11990, and may meet the Corps' wetland criteria, depending on site-specific vegetation, soils, and hydrologic conditions, and may be subject to sections 401 and/or 404 of the CWA.

Lacustrine Limnetic. Lacustrine limnetic refers to deepwater lakes and reservoirs, such as Merced and Washburn lakes. Both lakes were formed along the Merced River by glacial activity. In-lake vegetation is typically limited to rooted aquatic grasses, floating vascular plants, and algae. Meadow (palustrine emergent) and riparian (palustrine forest and palustrine scrub shrub) communities generally border lake margins.

These lakes provide important habitat for fish, amphibians, reptiles, and other aquatic species. Substrate varies from rock, gravel, sand, and mud. Lacustrine limnetic (deepwater lakes and ponds) are classified as deepwater habitat based on the Cowardin system. These areas are typically classified as other waters of the United States by the Corps and would be subject to regulation under section 404 of the CWA.

Segment Descriptions

The characteristics of the individual segments within the Merced River corridor, including vegetation, connectivity and integrity have been summarized from the Draft EIS below.

Segment 1: Merced River Above Nevada Fall

Numerous small wetland meadows and adjacent riparian habitat are present in the upper Wilderness reaches of the Merced River corridor above Nevada Fall. These high-elevation meadows typically occur on fine-textured, permanently to semi-permanently wet soils generally associated with perennial streams, seeps, lake margins, or depressions. Vegetation consists of low-growing, native, tussock-forming grasses, sedges, rushes, and perennial herbs. Merced and Washburn lakes were formed where the Merced River canyon was carved by glaciers. In-lake vegetation is typically limited to rooted aquatic grasses, floating vascular plants, and algae. Meadow communities border lake margins. These wetland plant communities are hydrologically driven by the groundwater and flooding regime of the Merced River.

Much of the Merced River above Nevada Fall is bordered by a narrow riparian zone influenced by stream gradient, slope, sedimentation, and aspect. High-elevation tributaries to the Merced River are sparsely vegetated with scattered patches of alpine riparian scrub and alpine willow thickets. As the river descends and the gradient becomes gentler, lodgepole pines, aspens (*Populus tremuloides*), willows (*Salix* spp.), and alders (*Alnus* spp.) become more prevalent. Riparian communities of the upper Merced River are generally intact, except in a few locations where human use is intense.

Segment 2: Yosemite Valley

Wetlands in Yosemite Valley are formed in low-gradient land adjacent to the Merced River, its tributaries, or other bodies of water that are, at least periodically, influenced by flooding or high water tables. Wetlands within Yosemite Valley have undergone systematic alteration since the middle of the 19th century as they were grazed, farmed, and used as recreational sites and corridors for travel. Other alterations that took place in the early 20th century include drainage ditches that were constructed to dewater wet meadows to reduce mosquito breeding areas and provide open land for grazing and agriculture. Many of these drainage ditches have not been filled in and continue to dewater wet meadows in Yosemite Valley. Road construction has involved drainage measures and diversion of surface water adjacent to many of the valley's wetlands. This wetland complex was formerly much more interrelated and contiguous but has been fragmented by roads, trails, and infrastructure.

Riparian zones in Yosemite Valley extend outward from bank edges of the Merced River and its tributaries into adjacent meadow and forest communities. Situated at the interface between terrestrial and aquatic ecosystems, the riparian zone acts to buffer hydrology and erosional cycles, control and regulate biogeochemical cycles of nitrogen and other key nutrients, limit fire movements, and create unique microclimates for animal species. Riparian zones in Yosemite Valley are characterized by broadleaf deciduous trees, such as white alder (*Alnus rhombifolia)*, black cottonwood (*Populus trichocarpa*), big-leaf maple *(Acer macrophyllum)*, white fir, and willow species. Riparian vegetation is regularly disturbed by the deposition and removal of soil and the force of floodwaters. Plants in this zone colonize newly formed river-edge deposits readily. The distribution of riparian communities varies with soil saturation and frequency of disturbance.

Primary stressors on the condition of riparian habitats along the Merced River are related to high recreation use, channel stabilization measures, and dewatering due to infrastructure. Water, wastewater and electric lines and other utility infrastructure are located throughout Yosemite Valley (Segment 2), including some within wetland areas. Restoration efforts (prescribed burns, invasive plant eradication, fencing, and increasing inundation levels through restoration of natural drainage patterns, among others) have generally been successful at improving the overall condition of the Valley's riparian communities. However, certain riparian areas within the Valley continue to experience vegetation trampling and bank erosion from heavy recreation use. Additional riparian vegetation impacts are occurring along reaches that have been armored by revetments or other defensive structures for the protection of structures (i.e., bridges).

Segment 3 and 4: Merced Gorge and El Portal

As the Merced River cascades through the gorge, the channel gradient and bank slopes steepen, the river channel narrows, and the floodplains become considerably smaller than those of the Yosemite Valley. The steep gradient, combined with the boulders and cobbles of the riverbed and bank, forms a series of continuous rapids between Yosemite Valley and El Portal. The Merced River gorge is lined with a narrow band of riparian vegetation along the river course.

Flooding has been an important aspect of the development of riparian communities along the Merced River and its tributaries that intersect drier adjacent vegetation types of El Portal. Localized seasonal

flooding creates debris dams in tributary channels, thus furthering a diversity of scour and depositional soils for riparian species. On the Merced River, natural flooding and vegetative patterns are influenced by the construction of levees and application of riprap to confine the river. These structures have destroyed riparian vegetation and have limited their reestablishment in some places.

In the El Portal area, riparian communities occur along tributaries of the Merced River, on flat topographical shaded terraces above the river, in backwater channels, and in areas where runoff from upland sites collects in natural depressions. Native Oregon ash (*Fraximus latifolia*), willow, and Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) trees occur in the wetter areas, as well as orchard components in some locations. Foothill pines and valley oaks tend to dominate the drier terraces adjacent to riparian sites.

Oxbows, river terraces, and seasonal river channels were a part of the riparian wetlands of the area, but have been affected by early to mid-20th century development in what is now the El Portal Administrative Site. Many of the sites that would be characterized as palustrine have been affected to some degree. The remaining wetland areas that appear on the USFWS (1995) wetland inventory are riverine perennial wetlands and are in proximity to the Merced River or other stream drainages. Direct human intrusion into the riparian areas of this river zone, especially to the south, is minimal because of the topography and difficulty of access.

Segment 5 and 8: South Fork Merced River Above and Below Wawona

From its headwaters, the South Fork Merced River flows west at a relatively consistent but steep gradient through a glaciated alpine environment and then enters a V-shaped, unglaciated river valley. The upper South Fork supports limited riparian vegetation, primarily due to steep topography and high-velocity flows. The steep gradients along the upper and lower South Fork Merced River are not conducive to the establishment of an extensive riparian zone. Typical riparian species — willow, alder, aspen, and maple — are restricted to a narrow fringe along the river. High-elevation tributaries to the South Fork Merced River are either unvegetated, high-velocity, and rocky in nature or are only sparsely vegetated. Subalpine meadows along the South Fork Merced River are similar in composition to those described for the upper main stem of the Merced River. Vegetation in alpine lakes is typically limited to rooted aquatic grasses, floating vascular plants, and algae. The upper South Fork is generally pristine and remains virtually undisturbed by human-related effects. The steep gradient below Wawona along the South Fork prevents the establishment of an extensive riparian zone. The limited riparian vegetation along the lower reach remains relatively untouched by human intrusion.

Segment 6 and 7: Wawona

In the Wawona area, the Merced River meanders through a large floodplain meadow (part of a deep alluvial valley) and has substantial gravel bars within the channel. As the river descends and the gradient becomes gentler, riparian vegetation (willows and alders) becomes more prevalent. Willows often colonize sandbars that are deposited at the margins of or within the river channel. In this area, the riparian corridor resembles the riparian corridor seen along the Merced River as it flows through Yosemite Valley. As with certain points within Yosemite Valley, trampling of riparian vegetation and associated erosion does occur in this area, resulting from heavy use in the vicinity of the Wawona Campground.

THE PREFERRED ACTION IN THE MERCED RIVER PLAN

The Preferred Alternative of the *Merced River Plan/DEIS* would include significant restoration within 100 feet of the river and in meadow and riparian areas, maintaining daily visitation in Yosemite Valley to accommodate the same peak levels observed in recent years, reducing unnecessary facilities and services, and converting facilities from administrative use to public use where feasible. Alternative 5 envisions broad ecological restoration goals, including essential restoration of riverbanks and meadow and riparian habitat. Proposed restoration actions are feasible and achievable, and leverage engineering and design features to enhance meadow and floodplain connectivity and free-flowing condition. Much of the development footprint within 100 feet of the river is removed corridorwide. Targeted infrastructure within the bed and banks of the river is removed, and those areas ecologically restored.

Actions to manage visitor use and facilities under Alternative 5, specifically those concerning vehicle access and overnight accommodations, would result in a 2% increase in lodging accommodations. The campsite inventory would increase by 29% in the Merced River corridor and 37% in Yosemite Valley. 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 former Upper River Campground area, and east of El Capitan Picnic Area at Eagle Creek. Under Alternative 5, there would be a net increase of 13% in Yosemite Valley overnight use. This would largely result from the increase in units at Curry Village. Management actions related to lodging would focus on removing lodging from the ordinary high water mark and Housekeeping Camp, and slightly reducing lodging in wilderness. Tent cabins in the Boys Town area would be replaced with hard-sided lodging in Curry Village to increase the availability of year-round accommodations.

Alternative 5 would restore approximately 203 acres of vegetation, including 40.52 acres of wetlands, as a result of actions common to Alternatives 2-6 in conjunction with actions specific to Alternative 5. Actions to manage visitor use and facilities would result in the loss of approximately 36.89 acres of vegetation and 2.67 acres of wetlands as a result of actions specific to Alternative 5.

For a detailed description of the Preferred Alternative, refer to Vol. I, Chapter 8 of the *Draft Merced River Plan/DEIS* (NPS 2012).

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION ON WETLANDS

The purpose of the Merced River Plan is to provide a comprehensive management plan for the protection of the Merced River's free-flowing condition, water quality, and the values that make the river worthy of designation. The preferred alternative, Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration, includes management action in Segments 1-8 of the Merced River corridor which would affect wetlands. Though the overall impact would be long-term and beneficial, some localized actions would have an adverse impact on wetlands. A more detailed description of Alternative 5 is included in the "Alternatives" (Chapter 8) of the *Merced River Plan/DEIS*. The following is a summary of actions that could have an effect on wetlands. A summary of cumulative impacts follows.

Proposed New Development in the Preferred Alternative of the *Merced River Plan/DEIS*

Segment 2: Yosemite Valley

Construction activities associated with new development in Segment 2 would result in direct, temporary and permanent losses of native vegetation as well as the redevelopment of existing developed areas. Outside of previously developed areas, the majority of new development in Segment 2 would occur in upland habitats and would not directly impact wetlands. However, direct impacts to wetlands would occur at Curry Village, Yosemite Village Day-use Parking Area, and Yosemite Lodge and Camp 4 (see **figures O-9** through **O-12** and **table O-2**). Construction activities at Curry Village would result in direct, permanent losses of federally protected wetlands. Impacts to wetlands would occur in palustrine emergent wetlands associated with Stoneman Meadow and intermittent channels flowing through the area. Approximately 0.06 acres of potentially jurisdictional wetland features would be directly and permanently impacted by the resigned overnight visitor accommodations at Boys Town in Curry Village under Alternative 5. Construction activities at the Yosemite Village Day-use Parking Area would result in direct, temporary and permanent losses of federally protected wetlands. Impacts to wetlands would occur in palustrine emergent wetlands located adjacent to the Northside Drive and Sentinel Crossover intersection, palustrine forested wetlands associated with the Merced River, and intermittent channels flowing through the area. Approximately 2.56 acres of potentially jurisdictional wetland features would be directly and permanently impacted by the redesign of the Yosemite Village Day-use Parking Area and associated intersection and roadway improvements by the proposed actions under Alternative 5. Construction activities at Yosemite Lodge and Camp 4 would result in direct, permanent losses of federally protected wetlands. Impacts to wetlands would occur in palustrine emergent wetlands and along the Merced River and in intermittent channels flowing through the area. Approximately 0.05 acres of potentially jurisdictional wetland features would be directly and permanently impacted by the Yosemite Lodge Parking Area and replacement of temporary housing at Highland Court with new permanent housing under Alternative 5.

TABLE O-2: SUMMARY OF WETLAND IMPACTS IN SEGMENT 2 – ALTERNATIVE 5

Wetland Type	Curry Village	Camp 6 and Yosemite Village	Yosemite Lodge and Camp 4	Total
Palustrine Emergent	0.04	1.21	0.01	1.26
Palustrine Forested	0	0.96	0	0.96
Riverine Intermittent	0.02	0.39	0.03	0.44
Riverine Perennial	0	0	0.01	0.01
SOURCE: NPS 2012c				

Losses to these wetlands would occur through site clearing, filling, grading, and subsequent development. Wetlands that cannot be avoided and would be permanently filled must be compensated to result in "no net loss" of wetlands. Adherence to proposed best management practices and

mitigation measures, and avoidance of wetlands during construction where possible, would reduce direct impacts to wetlands to local, long-term, moderate and adverse.

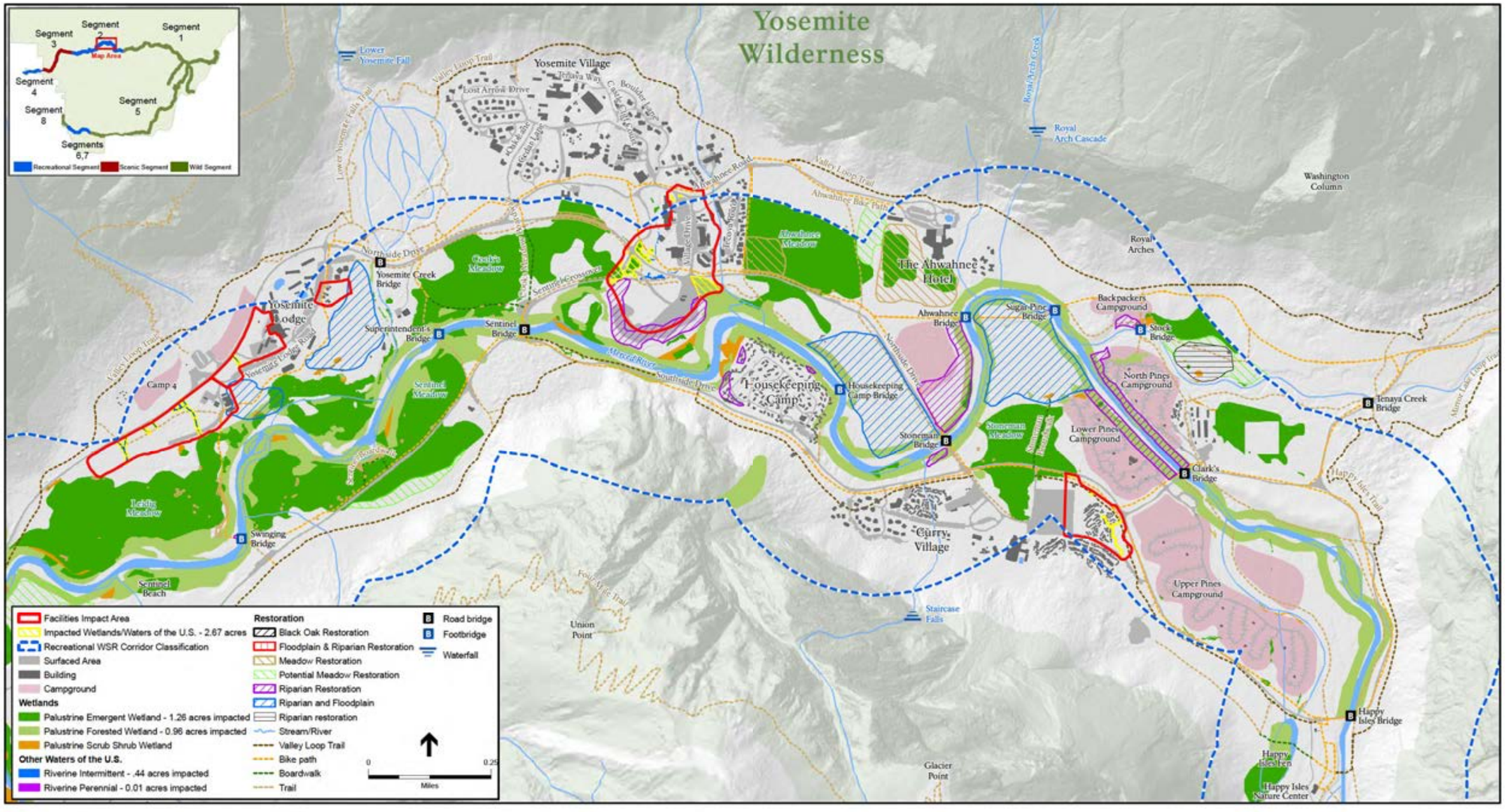
Construction activities associated with new development in Segment 2 may also generate indirect impacts to wetlands. Construction would involve activities such as grading and excavation that would generate loose, erodible soils. These activities could result in substantial erosion off-site to adjacent wetlands, resulting in decreases in water quality due to sedimentation. Other indirect impacts include potential modifications to flow, circulation, hydroperiod, or other aspects of the hydrologic regime; human intrusion into wetlands; and temporary impacts to wetlands. However, post-construction, temporarily impacted areas would be restored. Adherence to proposed best management practices and mitigation measures, and avoidance of wetlands during construction where possible, would reduce indirect impacts to wetlands to local, long-term, minor and adverse.

Segment 4: El Portal

Construction activities associated with new development in Segment 4 would result in direct, temporary and permanent losses of native vegetation as well as the redevelopment of existing developed areas. Outside of previously developed areas, new development in Segment 4 would occur in upland habitats and would not directly impact wetlands. However, construction activities associated with the El Portal Remote Visitor Parking, the removal of Odger's Fuel Storage Facility, and restoration of the Greenemeyer Sandpit may generate indirect impacts to wetlands. Construction would involve activities such as grading, excavation, and demolition that would generate loose, erodible soils. These activities could result in substantial erosion off-site to adjacent wetlands, resulting in decreases in water quality due to sedimentation. Other indirect impacts include potential modifications to flow, circulation, hydroperiod, or other aspects of the hydrologic regime; human intrusion into wetlands; and temporary impacts to wetlands. However, post-construction, temporarily impacted areas would be restored. Adherence to proposed best management practices and mitigation measures, and avoidance of wetlands during construction where possible, would reduce indirect impacts to wetlands to local, long-term, minor and adverse.

Segment 7: Wawona

Construction activities associated with new development in Segment 7 would result in direct, temporary and permanent losses of native vegetation as well as the redevelopment of existing developed areas. Outside of previously developed areas, new development in Segment 7 would occur in upland habitats and would not directly impact wetlands. However, construction activities associated with new development in Segment 7 may generate indirect impacts to channels and waters of the US. Construction would involve activities such as grading and excavation that would generate loose, erodible soils. These activities could result in substantial erosion off-site to adjacent wetlands, resulting in decreases in water quality due to sedimentation. Other indirect impacts include potential modifications to flow, circulation, hydroperiod, or other aspects of the hydrologic regime; human intrusion into wetlands; and temporary impacts to wetlands. However, post-construction, temporarily impacted areas would be restored. Adherence to proposed best management practices and mitigation measures, and avoidance of wetlands during construction where possible, would reduce indirect impacts to wetlands to local, long-term, minor and adverse.



SOURCE: NPS, 1997, 2006, 2010, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-9

Segment 2 - Overview of Preferred Alternative Wetland Impacts

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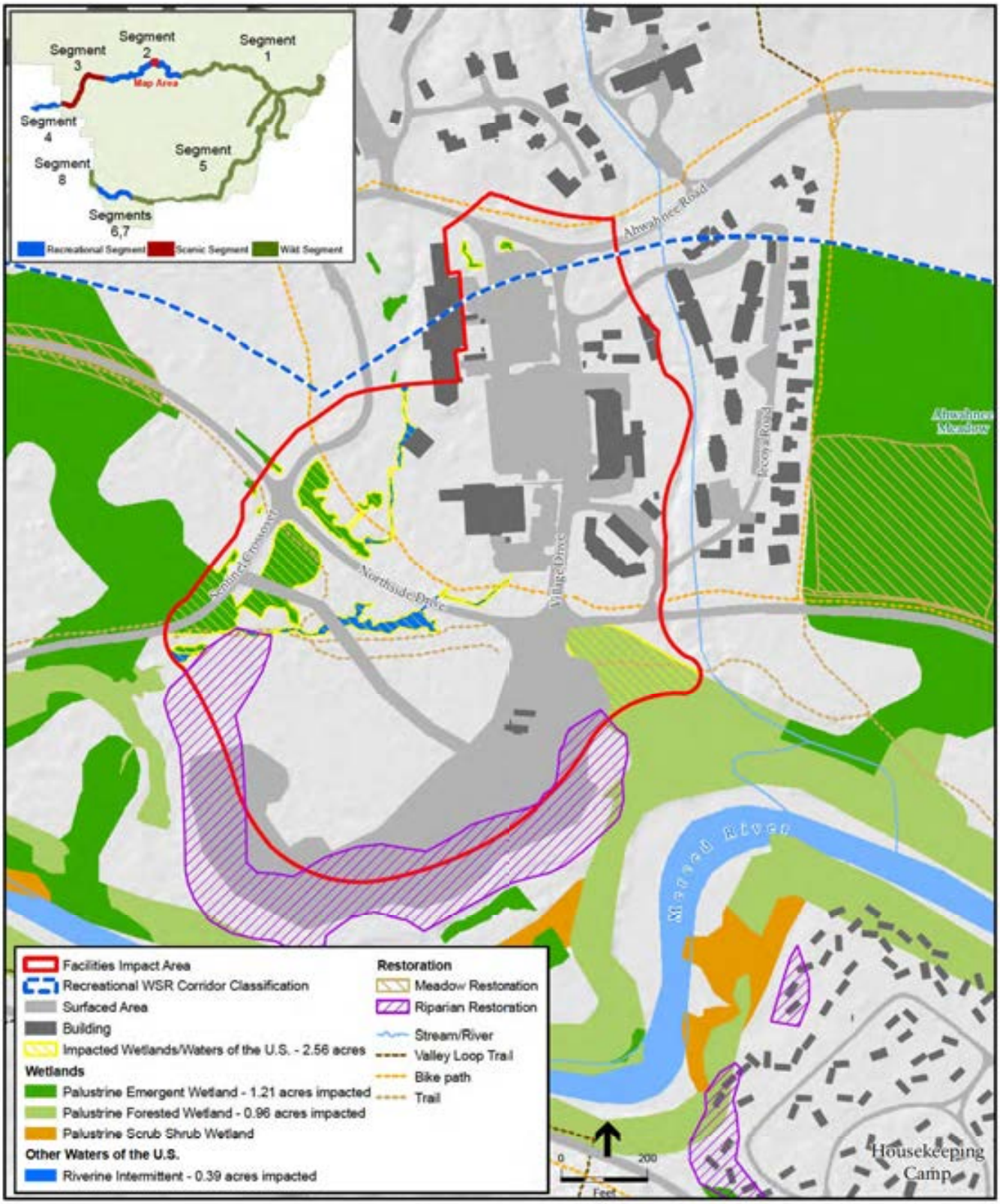
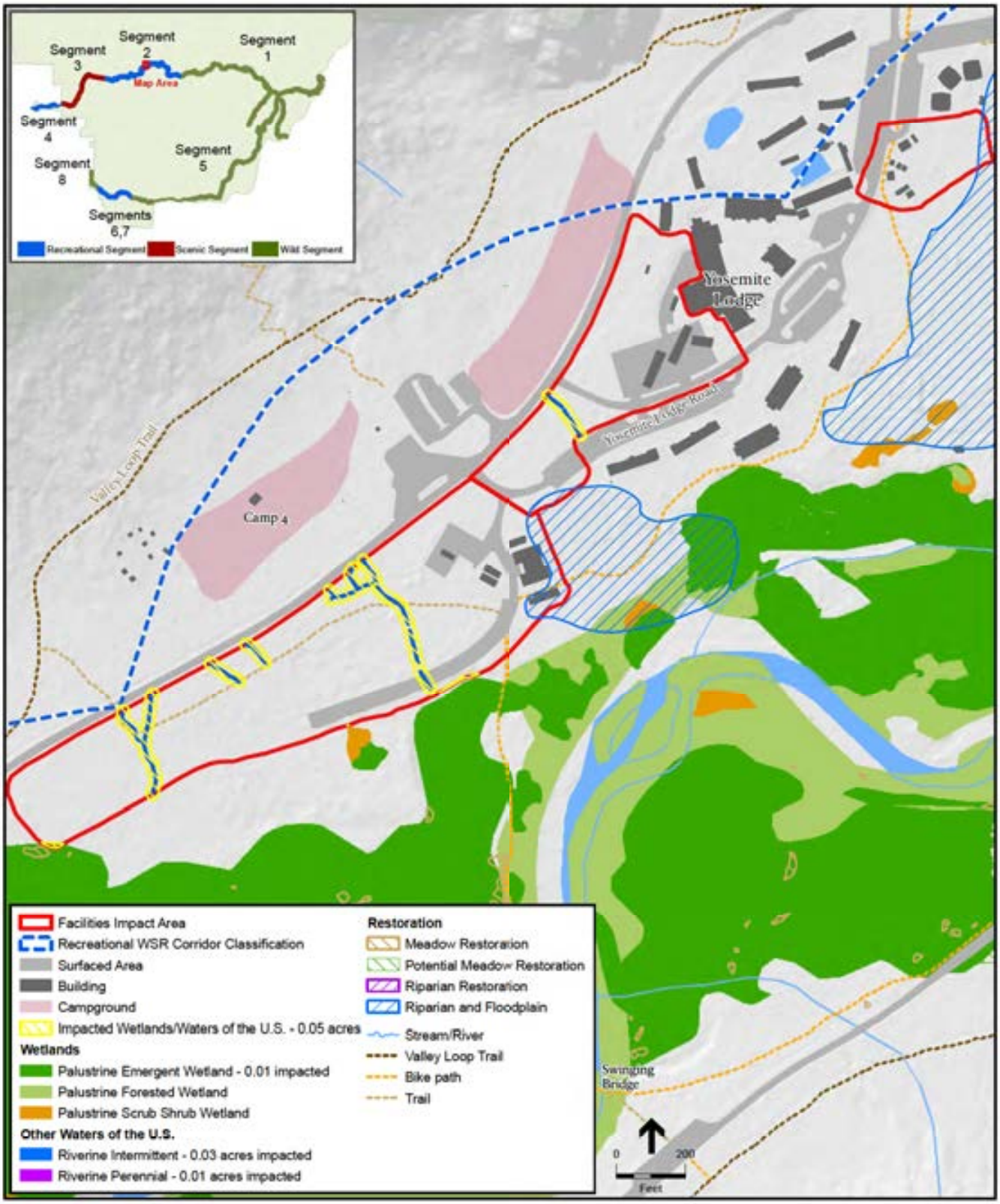


SOURCE: NPS, 1997, 2006, 2010, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-10

Segment 2 - Preferred Alternative Camp 6 and Yosemite Village Wetland Impacts



SOURCE: NPS, 1997, 2006, 2010, 2011

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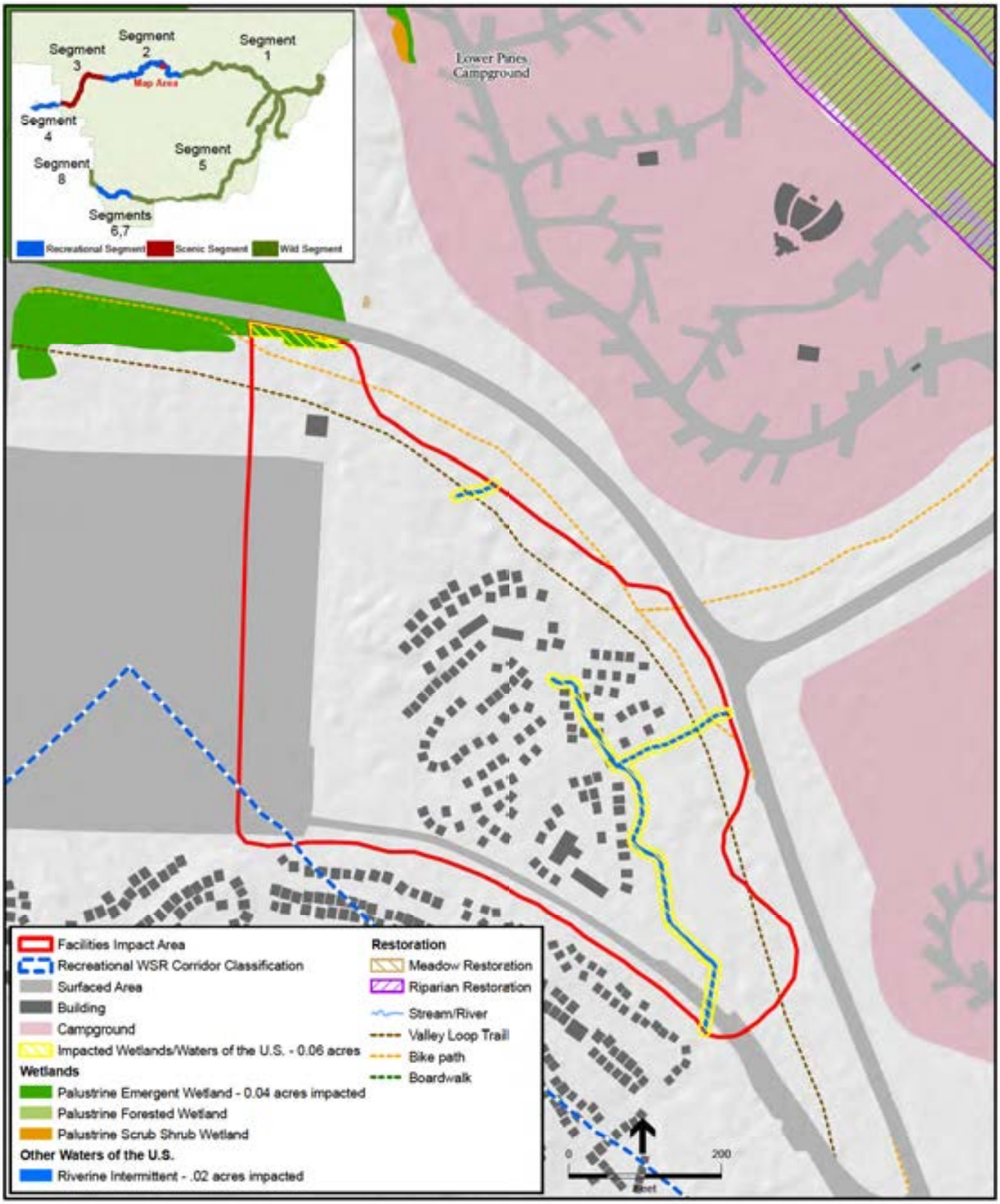
Figure O-11

Segment 2 - Preferred Alternative

Yosemite Lodge and Camp 4 Wetland Impacts



SOURCE: NPS, 1997, 2006, 2010, 2011

Merced River Comprehensive Management Plan and EIS . 210436

Figure O-12

Segment 2 - Preferred Alternative
Curry Village Wetland Impacts

Restoration

Proposed restoration management actions under Alternative 5 would improve hydrologic function and restore ecological integrity of the Merced River corridor, including associated plant communities and wetlands. Management actions under Alternative 5 would result in the restoration of approximately 40.52 acres of wetlands in Segments 2 and 4, which represents a corridorwide, long-term, moderate, beneficial impacts on wetlands.

The primary components which would benefit wetlands in all segments (Segments 1-8) in the long-term include the following:

- *Removal of Abandoned Infrastructure* – Abandoned underground infrastructure would be removed that alters hydrology, including remnants of abandoned sewer treatment facilities, sewer and water lines, and manholes. This infrastructure currently contributes to dewatering of meadows and wetlands, and alteration of the natural hydrologic regime of the Merced River. Areas of removed infrastructure would be restored to natural conditions, including revegetation with native plants.

- *Restoration of Eroded and Vulnerable Riverbanks* – Areas with denuded vegetation and areas susceptible to erosion would be stabilized and revegetated with native plants. Re-vegetated areas would be protected using closure signs, fencing, and/or other natural barriers such as rocks and logs as deterrents.

- *Protection of the Riparian Zone* – The riparian zone would be protected from new development within 150' from the ordinary high water mark. Campsites within 100' feet of the ordinary high water mark would be removed or relocated.

- *Removal and Replacement of Riprap* –Riprap would be removed where possible to restore natural river processes. Riprap would be replaced with native riparian vegetation, using bioengineering techniques if riverbank stabilization is still necessary for infrastructure protection.

- *Addressing Trails in Sensitive Habitat* – Trails would be rerouted out of sensitive habitats or boardwalks would be installed through wetlands. New trail routes should avoid wetlands and special status habitat.

In Segment 1, additional actions include requiring administrative pack stock to feed on pellet feed that is packed into the site instead of allowing pack stock to graze in meadow areas. This would help protect meadow vegetation from high levels of grazing by reducing the level of vegetation trampling by administrative pack stock and reducing the dispersal of manure and roll pits.

In Segment 2, the location of some roads and trails bisect or otherwise cross through meadows and cause fragmentation, soil compaction, and vegetation trampling of Valley meadows. Additionally, these roads and trails limit or disrupt meadow hydrologic connectivity. To address these issues, fill would be removed from wetlands and sensitive areas at the Ahwahnee Meadow, boardwalks would be installed in wet areas, and culverts would be added to improve hydrologic connectivity. Stoneman Meadow would be restored by removing roadside parking and unnatural fill material, and extending fencing to protect wetlands, and the Curry Orchard parking lot would be redesigned to promote water flow from the cliff walls to Stoneman Meadow. In addition, fencing would be installed along the

northern perimeter of El Capitan Meadow and boardwalks, and viewing platforms would be installed to reduce habitat fragmentation; boardwalks would be constructed at the Valley Loop Trail as well to reduce impacts on wet meadow habitat in Slaughterhouse Meadow. These actions would collectively improve meadow and wetland habitat integrity, and enhance contiguity of meadow habitats as well as hydrological connectivity between meadow, riparian, and floodplain habitats.

In Segment 4, the Greenemeyer Sandpit contains fill material that precludes natural flooding and regeneration of riparian plant communities. The Greenemeyer Sandpit would be restored to natural conditions. Fill material would be removed and the topography recontoured. Native riparian vegetation would be planted to restore the natural vegetation for the site. Abbieville and the Trailer Village contain impacts of former development, including paved roads and parking and compacted soils within 150 feet of the riverbanks. Asphalt and imported fill would be removed. The area would be recontoured and planted with native riparian species and oaks.

Overall, restoration activities have the potential to create localized, short-term, minor, adverse impacts. For example, construction activities associated with restoration management actions could result in damage to or removal of vegetation, and the potential introduction and spread of invasive nonnative species. However, restoration activities are anticipated to result in net long-term, beneficial impacts as natural ecological processes are restored.

FUNCTIONS AND VALUES

This section describes the functions and values of the wetland types impacted under Alternative 5: Palustrine emergent wetlands, palustrine forested wetlands, riverine intermittent wetlands, and riverine perennial wetlands. The following functions and values were evaluated based on those described in Procedural Manual #77-1:

- *Biotic functions,* including fish and wildlife habitat, plant productivity, native species, habitat diversity, threatened and endangered species;
- *Hydrologic functions,* including flood attenuation, streamflow maintenance, groundwater recharge and discharge, water supply, erosion and sediment control, water purification, and detrital export to downstream systems;
- *Cultural values,* including aesthetics, education, historical values, archaeological values, recreation, and interpretation;
- *Research/scientific values,* including potential references sites for scientific research; and
- *Economic values,* including flood protection, fisheries, and tourism.

Palustrine Habitats

Biotic Functions

The relatively dense layer of herbaceous vegetation in the palustrine emergent wetlands provides a variety of benefits for many wildlife species. In particular, the meadow communities provide foraging habitat for raptors and perennial range habitat for deer to bed and forage. The palustrine forested wetlands provide several benefits for wildlife species; specifically, it provides nesting and perching habitat for several species of birds, and leaf litter provides habitat for smaller animals. All the palustrine wetlands provide habitat for pollinators and other invertebrates.

Hydrologic Functions

Palustrine habitats could play an important role in flood attenuation and sediment retention. In addition, wetlands located below roads and other developed areas may serve to retain sediment and degrade nutrients before the runoff enters downstream systems.

Cultural Values

The palustrine habitats in the study area do not contain any known archaeological sites. Apparent cultural values inclue the significant aesthetic values that meadow and riparian wetlands provide, particularly in contrast to the steep, rocky walls of the valley. Interpretive guides and the meadow clearings that allow majestic views of the park have brought appreciation and awareness of wetlands to the millions of park visitors that have visited the area for decades.

Research/Scientific Values

Palustrine habitats, particularly emergent wetlands, provide rich opportunities for scientific research. Climate change, development, and vegetation management practices have caused changes in plant communities in the meadows. Such changes may be reflected in the floodplain sediments through charcoal debris and the pollen record, which may be amendable to scientific study.

Economic Values

For the reasons listed above, the palustrine habitats could provide significant economic value for flood protection, biological resources (in particular fisheries), and tourism.

Riverine Habitats

Biotic Functions

The Merced River provides a year-round water source for wildlife and habitat for fish and aquatic invertebrates. The intermittent channels provide a seasonal water source for wildlife and invertebrates.

Because the unconsolidated shore habitats lack vegetation and usually lack water, they may not provide significant habitat or food sources for wildlife.

Hydrologic Functions

The hydrologic functions of the Merced River are flood attenuation, streamflow maintenance, water supply, erosion control, sediment retention, water purification, and detrital export (including large woody debris) to downstream systems. Additionally, because of the coarse texture of the sediments that make up the Merced River channel, riverine habitats along the Merced River could offer some degree of groundwater recharge function. The intermittent channels are periodic water sources and therefore provide less function; however, they nevertheless contribute streamflow maintenance, water supply, erosion control, sediment retention, water purification, and detrital export to downstream systems.

Cultural Values

Because Native Americans are known to have focused some activities along streams, riverine habitats may provide archaeological value. Perennial channels also provide an aesthetic value. Visitors to the park enjoy the Merced River and engage in activities such as swimming, boating, fishing, and photography. The seasonal water flow and seasonal lack of vegetation in the intermittent channels limit the aesthetic value of these habitats.

Research/Scientific Values

The riverine habitats may provide opportunities for research in groundwater-vegetation relationships and in the effectiveness of riparian habitat restoration techniques.

Economic Values

For the reasons listed above, the riverine habitats could provide significant economic value for flood protection, biological resources (in particular fisheries), and tourism.

JUSTIFICATION

Alternatives Considered

The range of alternatives considered in the *Merced River Plan DEIS*, presented in the "Alternatives" (Chapter 8), include the No Action Alternative (Alternative 1), Self-Reliant Visitor Experiences and Extensive Floodplain Restoration (Alternative 2), Dispersed Visitor Experiences and Extensive Riverbank Restoration (Alternative 3), Resource-based Visitor Experiences and Targeted Riverbank Restoration (Alternative 4), and Diversified Visitor Experiences and Selective Riverbank Restoration (Alternative 6).

Alternative 1

Alternative 1 provides a baseline on which to compare impacts from Alternatives 2 through 6. However, with wetland impact minimization and various restoration measures included in the preferred alternative, Alternative 1 may not necessarily be less damaging overall to wetlands because it would forego numerous opportunities for restoration. Further, it does not accomplish the purpose of the project.

Alternative 2

The guiding principles of Alternative 2 include maximizing the restoration of the 100-year floodplain by removing infrastructure not essential to resource-related recreation, and creating a more self-reliant visitor experience, where less commercial services are available. Visitor-use levels are managed to allow for visitor experiences free of crowding or congestion. Alternative 2 would restore up to approximately 347 acres of vegetation, including 47.97 acres of wetlands, as a result of actions common to Alternatives 2-6 and those specific to Alternative 2. Actions to manage visitor use and facilities would result in the loss of approximately 32.37 acres of vegetation and the permanent loss of 2.87 acres of potentially jurisdictional wetlands as a result of actions specific to Alternative 2. This alternative includes large-scale wetland restoration actions including removal of the road through Stoneman Meadow, removal of Northside Drive through Ahwahnee Meadow, removal of parking outside the 10-year floodplain at the Yosemite Village Day Use Parking Area, the removal of roadside parking along Yosemite Valley meadows complete closure and ecological restoration of Housekeeping Camp, and the restoration of Wawona Golf Course to meadow habitat. These actions are possible when coupled with the decrease in daily Yosemite Valley visitation proposed under Alternative 2.

Alternative 3

The guiding principles of Alternative 3 include restoration of large portions of the floodplain and the riparian area within 150 feet of the river. This alternative accommodates much lower maximum visitor use levels than today, and offers fewer commercial services and facilities. Visitor use levels are managed to allow for dispersed visitor experiences free of crowding or congestion. Alternative 3 would restore approximately 302 acres of vegetation, including 46.79 acres of wetlands, as a result of actions common to Alternatives 2-6 in conjunction with actions specific to Alternative 3. Actions to manage visitor use and facilities would result in the loss of approximately 31.66 acres of vegetation and the permanent loss of 2.75 acres of potentially jurisdictional wetlands as a result of actions specific to Alternative 3. This alternative includes robust wetland restoration actions including removal of the road through Stoneman Meadow, removal of Northside Drive through Ahwahnee Meadow, removal of parking outside the 10-year floodplain at the Yosemite Village Day Use Parking Area, the removal of roadside parking along Yosemite Valley meadows and the restoration of Wawona Golf Course to meadow habitat.

Alternative 4

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 large increase in overnight camping capacity and moderate decreases in the overnight lodging capacity. Alternative 4 would restore approximately 223 acres of vegetation, including 44.57 acres of wetlands, as a result of actions common to Alternatives 2-6 and those specific to Alternative 4. Actions to manage visitor use and facilities would result in the loss of approximately 34.57 acres of vegetation and the permanent loss of 2.67 acres of potentially jurisdictional wetlands as a result of actions specific to Alternative 4. This alternative includes targeted wetland restoration actions including removal of the road through Stoneman Meadow, removal of parking 150 feet away from the river at the Yosemite Village Day Use Parking Area, and the removal of roadside parking along Yosemite Valley meadows.

Alternative 6

The guiding principles of Alternative 6 include limited restoration within 100 feet of the river and in meadow and riparian areas, infrastructure improvements to accommodate growth in peak daily visitation in Yosemite Valley, and expansion of facilities and services to allow for diversified visitor experiences. Alternative 6 would restore approximately 170 acres of vegetation, including 37.37 acres of wetlands, as a result of actions common to Alternatives 2-6 and those specific to Alternative 6. Actions to manage visitor use and facilities would result in the loss of approximately 36.89 acres of vegetation and the permanent loss of 2.67 acres of potentially jurisdictional wetlands as a result of actions specific to Alternative 6. This alternative includes focused wetland restoration actions including removal of parking 150 feet away from the river at the Yosemite Village Day-use Parking Area and the removal of roadside parking along Yosemite Valley meadows.

Nonwetland Alternatives to the Proposed Action

The *Merced River Plan/DEIS* involves comprehensive management within the Merced River corridor, which includes riverine, palustrine and lacustrine habitat. The purpose of the Merced River Plan is to provide a comprehensive management plan for the protection of the Merced River's free-flowing condition, water quality, and the values that make the river worthy of designation. There are no alternatives to the proposed action that could be located outside the floodplain or wetland and aquatic habitat of the Merced River corridor, as the plan is focused upon enhancements to aquatic habitats.

Design or Modifications to Minimize Harm to Wetlands

Mitigation Measures

A full list of mitigation measures prescribed for the *Merced River Plan/DEIS* are outlined in Appendix C. Mitigation measures specific to wetland resources are summarized below. The National Park Service (and its contractors) shall implement the following mitigation measures, as appropriate, prior to, during, and/or after construction activities. Specific tasks would include, but are not limited to, the following:

Hydrology and Water Quality

- **MM-HYD-1.** Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that designates construction best management practices to be used to control the sources of fine sediment and to capture and filter it before entering the river. The SWPPP shall define the characteristics of the site, identify the type of construction that will be occurring, and describe the practices that will be implemented to control erosion and the release of pollutants in stormwater. At a minimum, the SWPPP shall address the following, as applicable:

  Stabilization Practices

  – The stabilization practices to be implemented shall specify the intended stabilization practices, which may include one or more of the following: temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and/or grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Unless otherwise directed by the Contracting Officer for the reasons below (i.e., unsuitable conditions or no activity for less than 21 days), stabilization practices shall be initiated as soon as practicable, in any portion of the site where construction activities have temporarily or permanently ceased, but no more than 14 calendar days after the activities cease.

  – Unsuitable Conditions - Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

  – No Activity for Less Than 21 Days - Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

  Structural Practices

  – The Contractor shall implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Location and details of installation of structural practices shall be depicted on the construction drawings.

  Silt Fences

  – The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings or as needed based on Contractor operations. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

– Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6-inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the COR.

Straw Bales

– Straw bales are not authorized for use in storm water control in Yosemite National Park as they have the potential to introduce exotic species into the Park environment.

Diversion Dikes

– Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as shown on the drawings or as needed based on Contractor operations. Location of diversion dikes shall be fully coordinated with cultural and natural environmental protection requirements described in Section 01355, Natural, Cultural, and Physical Resources Protection.

Filter Fabric

– The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments that are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

Physical Property	Test Procedure	Strength Requirement
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec^{-1}
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

Silt Fence Stakes and Posts

– The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when hardwood is used and 4 inches by 4 inches when softwood is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section)

utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

Identification Storage and Handling

– Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

Maintenance

– The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

– Silt fences shall be inspected in accordance with the below paragraph, Inspections. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed with approval of COR. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade.

– Diversion dikes shall be inspected in accordance with the below paragraph, Inspections. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade.

Inspections

– The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every 7 calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

– Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

– For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the COR within 24 hours of the inspection as a part of the Contractor's daily CQC Report. A copy of the inspection report shall be maintained on the job site.

Wetlands

- **MM-VEG-4.** Delineate wetlands and apply protection measures during construction. Wetlands shall be delineated by qualified National Park Service staff or certified wetland specialists and clearly marked prior to work. Perform activities in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.

- **MM-VEG-5**. The Contractor shall adhere at all times to the conditions of U.S. Army Corps of Engineers Nationwide Permit No. 33, Temporary Construction, Access and Dewatering, with the following conditions as a minimum:

  – All work will be subject to the Standard and Technical Conditions of the Certification of the California Regional Water Quality Control Board, a copy which will be provided to the Contractor.

  – Work in streambeds is to be performed in periods of low water conditions. Contractor shall monitor stream flow conditions and weather forecasts at all times during the course of the work. During thunderstorms or other intense rain conditions, streambeds at Yosemite can fill rapidly.

  – Re-grade and restore disturbed areas to preexisting contours to maintain drainage patterns.

- **MM-VEG-6.** The Contractor shall fence construction areas adjacent to aquatic habitats to prohibit the movement of aquatic species into the construction area and to control siltation and disturbance in aquatic habitats.

  – The Contractor shall salvage and reuse wetland soils as fill to the maximum extent possible.

  – The Contractor shall use trench plugs where designated on the drawings in wetland areas to prevent changes to natural flow patterns.

  – During dewatering, intakes shall be completely screened with wire mesh not larger than 5 millimeters to prevent aquatic species from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction.

  – Access routes to and through work locations in the meadows and wetlands shall be planked with 1 1/8" plywood, stabilization mats or other method approved by the contracting officer.

Refer to Appendix C of the *Merced River Plan/ DEIS* for a complete list of resource-specific mitigation measures applicable to the preferred alternative. The Preferred Alternative has been designed to mitigate harmful effects to wetlands. The Merced River Plan/DEIS includes programmatic actions that will require preparation of a subsequent statement of findings for specific projects.

Site Restoration

Restoration of riverine habitat functions and values is an integral part of the preferred alternative in Segments 1-8 of the Merced River corridor. Restoration of 40.52 acres of wetland habitat would improve palustrine habitat functions and values in Segments 2 and 4. Additional restoration activities that are

incorporated into the preferred alternative are described above, under the subheading *Environmental Consequences of the Proposed Action on Wetlands*.

Proposed Compensation

The emphasis of the Merced River Plan is to avoid and minimize impacts to wetland resources. Approximately 2.67 acres of wetlands would be impacted by Alternative 5, including 1.26 acres of palustrine emergent wetlands, 0.96 acres of palustrine forested wetlands, 0.44 of riverine intermittent wetlands, and 0.01 acres of riverine perennial wetlands. Compensation will be required for the direct impact to 2.67 acres of wetlands at Curry Village, Camp 6 and Yosemite Village, and Yosemite Lodge and Camp 4. The wetland features that would be affected by the proposed activities provide important natural functions such as nutrient cycling, sediment entrapment, and habitat for wildlife. Because this project must ensure "no net loss" of wetland functions or values, compensation of a minimum of 2.67 acres of wetland would be required.

The NPS will provide compensation through the restoration of approximately 40.37 acres of wetlands in Segment 2 (see Figures 9-29 through 9-32 in Chapter 9). Figures O-9 through O-12 display the locations of proposed actions to restore and enhance wetland habitats in areas near where wetland impacts will occur. These restoration actions will provide compensation for the wetland losses described above, resulting in a 15:1 habitat compensation ratio. Restored wetland types include palustrine forested wetland and palustrine emergent wetland. Restored areas will provide equivalent, if not higher, wetland functions and values to those features impacted by the project. In general, in-kind mitigation is preferable to out-of-kind mitigation because it is most likely to compensate for the functions and values lost at the impact site. However, in the case of the impacted riverine wetlands (where the impacts are much less than those to the palustrine wetlands), this habitat type is already abundant in the region and a priority was placed on creating additional palustrine emergent and forested wetlands, as this habitat type would adequately compensate for the lost functions and values of the riverine wetlands.

CONCLUSION

The proposed action would have a beneficial impact on the extent, function, and value of wetlands by implementing restoration management actions for the Merced River corridor. These management actions would include the removal of abandoned infrastructure, restoration of eroded and vulnerable riverbanks, protection of the riparian zone within 150' of the ordinary high water mark, removal of campsites within 100' of the ordinary high water mark, removal and replacement of riprap, and the rerouting of trails from sensitive habitat, including wetlands. The removal of fill from wetland and riparian areas would result in the net creation of wetlands within Segments 2 and 4. The net result of these actions would be improved hydrologic function and the restoration of ecological integrity of the Merced River, including associated plant communities and wetlands.

Approximately 2.67 acres of wetlands will be impacted by implementation of Alternative 5, including 1.26 acres of palustrine emergent wetlands, 0.96 acres of palustrine forested wetlands, 0.44 of riverine

intermittent wetlands, and 0.01 acres of riverine perennial wetlands. The NPS will provide compensation through the restoration of approximately 40.37 acres of wetlands in Segment 2

The National Park Service has determined that there is no practicable alternative that could be located outside the floodplain or wetland habitat. Mitigation and compliance with regulations and policies to prevent impacts to water quality, wetland function and values, and loss of property or human life would be strictly adhered to during and after construction.

Subsequent project-level documentation may be required for future development projects. Individual permits with other federal and cooperating state and local agencies will be obtained or updated as appropriate prior to any development activities. Therefore, the National Park Service finds the proposed action to be acceptable under Executive Order 11990 for the protection of wetlands.

Recommended:

Superintendent, Yosemite National Park Date

Certification of Technical Adequacy and Servicewide Consistency:

Chief Water Resources Division Date
or Professional Wetland Scientist, National Park Service

Approved:

Regional Director Pacific West Region, National Park Service Date